

MATERIALS TOWARD A MONOGRAPH OF THE GENUS LIPPIA. V

Harold N. Moldenke

LIPPIA LASIOCALYCINA var. SAINTHILAIREI Moldenke

The type specimen is deposited in the United States National Herbarium at Washington. The Eiten & Eiten 4914 originally distributed under this name seems to be L. phryxocalyx Briq.

In all, only 2 herbarium specimens, including the type, of this variety have been examined by me.

Citations: BRAZIL: Minas Gerais: A. Saint-Hilaire s.n. [Oljo d'Agua] (W--2383079--type, Z--isotype).

LIPPIA LASIOCALYX Herzog, Meded. Rijksherb. Leid. 29: 44--45. 1916.

Bibliography: Herzog, Meded. Rijksherb. Leid. 29: 44--45. 1916; A. W. Hill, Ind. Kew. Suppl. 6: 117. 1926; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 40 & 95 (1942) and [ed. 2], 97 & 190. 1949; Moldenke, Résumé 114 & 462. 1959.

Branched shrub, 3--4 m. tall; branches erect, tetragonal, shortly villous-pubescent; leaves decussate-opposite, very short-petiolate or the upper ones sessile; petioles 2--3 mm. long or obsolete; leaf-blades rather large, firmly chartaceous, broadly ovate, 6.7--6.8 cm. long, about 4.5 cm. wide, acute at the apex, coarsely serrate along the margins, obtuse or rounded at the base and contracted into the petiole, triplinerved at the base, dark-green above, paler beneath, sparsely roughened above with bulbous-based hairs, softly pubescent beneath; inflorescence spicate, aggregate in terminal racemes or panicles, to 15 cm. long; rachis and inflorescence branches tetragonal and villous-pubescent; peduncles 4--5 mm. long; spikes very short-pedunculate, subglobose, 4-quetrous, elongate and loose after anthesis, 1--1.5 cm. long; bractlets rhombic-ovate, about 4 mm. long and 4 mm. wide, subobtuse at the apex, squarrose-spreading, loosely strigose, eglandular, subequaling the corolla; calyx compressed, dilated, 2-carinate, long-villous on the keels, greatly accrescent after anthesis, enveloping the fruit when mature; corolla hypocrateriform, white, its tube short for the genus, about 1.5 mm. long, straight, greatly dilated above the calyx, subglabrous or puberulent above, the limb 5-lobed, the lobes equal, spreading, rounded.

The type of this species was collected by Theodor K. J. Herzog (no. 1851a) at Quebrada de Chajravuaitu, at an altitude of 1600 meters, Bolivia, in April, 1911. Herzog (1916) says "Diese Art wird durch die grob gesägten, sehr breiten Blätter, den endständigen, rispigen Blütenstand, die sparrigen Brakteen und den sehr grossen, plattgedrückten zottigen Kelch, schliesslich durch die auffallend kurze Kronenröhre sehr leicht von den verwandten Arten in der Gruppe Goniostachyum unterschieden."

Nothing is known to me about this species except what is stated in the literature. The original publication reference is given at

the Instituto Miguel Lillo as "Herzog, Bolivia III (1916) 44".

LIPPIA LAXIBRACTEATA Herzog, Meded. Rijksherb. Leid. 29: 45--46. 1916.

Bibliography: Herzog, Meded. Rijksherb. Leid. 29: 45--46. 1916; A. W. Hill, Ind. Kew. Suppl. 6: 117. 1926; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 40, 43, & 95. 1942; Moldenke, Lilloa 8: 424 (1942) and 10: 343 & 378. 1944; Moldenke, Castanea 13: 117. 1948; Moldenke, Alph. List Cit. 2: 377 & 535 (1948), 3: 691 & 909 (1949), and 4: 1293. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 97, 105, & 190. 1949; Moldenke, Résumé 114, 125, & 462. 1959; Moldenke, Phytologia 12: 170. 1965.

Medium-sized shrub, 3--4 dm. tall, very much branched; branches obtusely tetragonal, sulcate, the young ones gray-tomentellous; leaves decussate-opposite, petiolate; petioles 1--1.5 cm. long; leaf-blades chartaceous, oblong-elliptic, 5--8 cm. long, 2.2--2.8 cm. wide, rounded or obtuse at the apex, minutely crenate along the margins, obtuse at the base, glandular-tomentellous and reticulate on both surfaces, gray beneath; inflorescence spicate, pedunculate, to 2 cm. long; peduncles 5--10 mm. long, gray-pubescent; spikes to 9 per leaf-axil, nutant or finally downwardly curved, oblong, loosely 4-quetrous; bractlets elongate, 5--7 mm. long, ovate at the base, acuminate at the apex, equaling or slightly surpassing the corolla-tube, subsquarrose, carinate, villous-pubescent; calyx somewhat compressed, elliptic, shortly bifid, puberulent outside; corolla hypocrateriform, mostly white, the tube elongate, about 5 mm. long, honey-colored, somewhat dilated above the middle, puberulent, the limb white, 2-lipped, the lower lip somewhat longer, the lobes all crisped along the margins.

The type of this species was collected by Theodor K. J. Herzog (no. 1108) in thickets and on the campo at Villa Montes on the Rio Pilcomayo, Tarija, Bolivia, in November, 1910. An isotype in the Munich herbarium was photographed by Macbride as his type photograph number 20330. Herzog (1916) says "Aus der Verwandtschaft von L. salviaefolia! Charakteristisch sind die lockeren Aehren und langen, spitzigen Brakteen, wodurch sie sich von allen Arten dieser Gruppe entfernt."

The species has been collected in open dry places in woods, at 1200 meters altitude, flowering in April and November. The original publication reference is given at the Instituto Miguel Lillo as "Herzog, Bolivia III (1916) 45."

In all, 7 herbarium specimens, including type material, and 4 mounted photographs have been examined by me.

Citations: BOLIVIA: Tarija: R. E. Fries 1192 (S), 1592 (N, S); T. Herzog 1108 [Macbride photos 20330] (It--photo of isotype, Kr--photo of isotype, N--photo of isotype, N--photo of isotype, S--isotype, W--photo of isotype); Pflanz 4045 (W--1341230). ARGENTINA: Salta: Schreiter 6699 [Herb. Inst. Miguel Lillo 32707] (N).

LIPPIA LEPIDA Moldenke, Phytologia 2: 315--316. 1947.

Bibliography: Moldenke, Phytologia 2: 315--316. 1947; Moldenke,

Known Geogr. Distrib. Verbenac., [ed. 2], 80 & 190. 1949; E. J. Salisb., Ind. Kew. Suppl. 11: 138. 1953; Moldenke, Résumé 93 & 462. 1959.

Dwarf plant, apparently from a woody base, to 15 cm. tall; stems slender, subterete, densely short-pubescent with spreading often gland-tipped hairs, brown macroscopically, but glistening-silvery microscopically; nodes 2--4, not annulate; principal internodes 2.5--5.5 cm. long, or the very lowest abbreviated to 1 cm. or less; leaves 1--4 pairs, decussate-opposite, sessile, elliptic, 7--14 mm. long, 4--8 mm. wide, obtuse at the apex, sharply serrate along the margins, subacute or obtuse at the base, densely short-pubescent above and white-tomentose beneath; inflorescence capitate, usually two at each of the 1 or 2 upper nodes and a single terminal one; peduncles very slender, 1--3.5 cm. long, densely glandular-pubescent like the stems; heads hemispheric, about 1 cm. long and 1.5 cm. wide, densely many-flowered; bractlets large, ovate-elliptic, about 5 mm. long and wide, acute at the apex, glandular-pubescent, overlapping; corolla hypocrateriform, rose, projecting about 5 mm. beyond the bractlets, its limb 5 mm. or more wide.

The type of this little species was collected by Auguste François Marie Glaziou (no. 21891) near the encampment at Corrego do Brejo, Goiás, Brazil, in March or April, 1883, and is deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels. In all, 3 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: BRAZIL: Goiás: Glaziou 21891 (Br--type, F--photo of type, N--isotype, N--photo of type, Si--photo of type, Z--photo of type). Matto Grosso: Pilger 738 (B).

LIPPIA LIBERIENSIS Moldenke, Phytologia 2: 226. 1947.

Bibliography: Moldenke, Phytologia 2: 226 & 331. 1947; Moldenke, Alph. List Cit. 4: 1187. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 39 & 190. 1949; E. J. Salisb., Ind. Kew. Suppl. 11: 138. 1953; Moldenke, Résumé 47 & 462. 1959.

Shrub or tree; branches and branchlets obscurely tetragonal or subterete, densely short-pubescent when very young, glabrous in age, light-brownish; nodes annulate; principal internodes 1.5--7 cm. long; leaves decussate-opposite; petioles slender, 3--5 mm. long, densely short-pubescent when very young, very sparsely strigillose or pilosulous when mature, the hairs mostly in 2 bands on the axial surface; leaf-blades firmly membranous, ovate-lanceolate, 2.5--7.5 cm. long, 1.5--3.5 cm. wide, sharply acute at the apex, regularly serrulate from the base to the apex and more or less prolonged into the petiole, densely short-pubescent on both surfaces when young, scabrous and more or less strigose above or subglabrous when mature, irregularly strigillose on the venation beneath and usually more or less pulverulent beneath when mature; inflorescence axillary, capitate, nodding, usually 2 per node near the apex of the branches or branchlets; peduncles very slender, 2--2.5 cm. long, densely short-pubescent or puberulent; heads 1.3--1.6

cm. long, 1.7--2.4 cm. wide, many-flowered; bractlets broadly ovate, the lowest about 1.5 cm. long and almost 1 cm. wide at the base, subacuminate at the apex, densely puberulent.

The type of this little-known species was collected by Alberto Brenes in the vicinity of Liberia, Guanacaste, Costa Rica, in 1910, and is deposited in the Britton Herbarium at the New York Botanical Garden.

In all, 3 herbarium specimens, including the type, have been examined by me.

Citations: COSTA RICA: Guanacaste: Brenes s.n. [Liberia, 1910] (N--type, Si--isotype). Puntarenas: H. S. McKee 11193 (Lw).

LIPPIA LINDMANII Briq., Arkiv Bot. Stockh. 2 (10): 20--21, pl. 4. 1904.

Bibliography: Briq., Arkiv Bot. Stockh. 2 (10): 20--21, pl. 4. 1904; Prain, Ind. Kew. Suppl. 3: 104. 1908; Stapf, Ind. Lond. 4: 125. 1930; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 95. 1942; H. N. & A. L. Moldenke, Pl. Life 2: 69. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80 & 190. 1949; Moldenke, Alph. List Cit. 3: 666. 1949; Moldenke, Phytologia 5: 95 & 96. 1954; Moldenke, Résumé 93, 114, & 462. 1959.

Illustrations: Briq., Arkiv Bot. Stockh. 2 (10): pl. 4. 1904.

Small shrub or subshrub; stems erect, hexagonal, villosulous with spreading or crisped short hairs, with longer hairs and stipitate glands intermixed; middle internodes about 4 cm. long; leaves ternate, very short-petiolate; petioles 2--5 mm. long, villosulous; leaf-blades rather thick, gray-green above, canescent or gray beneath, ovate-elliptic or subrotund, about 4 cm. long and 3 cm. wide, obtuse or rounded at the apex, regularly crenate along the margins which are often convex below the middle, rounded at the base and confluent into the petiole, rugose, softly velutinous-tomentose or tomentellous on both surfaces, the indument more or less areolate on the upper surface, the teeth 1--1.5 mm. high and 1--3 mm. apart, the venation reticulate, more or less prominent beneath; inflorescence axillary in the upper leaf-axils, racemose, pedunculate; peduncles short, to 2.5 cm. long, subequaling the upper leaves, villous; heads large, at first subglobose, later ovate or conic-elongate, about 5 cm. long and 3.5 cm. wide; bractlets inflated, thin-membranous or scarious, rose, 6-ranked, subpatulous, closely appressed, broadly ovate, 1.5--2 cm. long, about 1.5 cm. wide, obtuse or shortly acute at the apex, reticulate-venose, loosely villosulous, with glands intermixed, eventually greatly enlarged; calyx very small, ovoid-campanulate, 1.8 mm. long, shortly 4-lobed, spreading long-villous throughout, the lobes ovate, about 0.5 mm. long; corolla hypocrateriform, purple or bright-purple, long-exserted, short-villosulous above, the tube geniculate, slender and cylindric at the base, somewhat ampliate above the bend, 5--7 mm. long to the bend and 5--8 mm. long above it, the throat yellow, the expanded limb surpassing the bractlets, the upper lobes shorter, rounded at the apex, the lateral ones ovate-rounded, the lower one

larger and obcordate, the upper and lateral ones 1.5—2 mm. long, the lower 3 mm. long and 3 mm. wide; stamens and style typical for the genus; fruit not seen.

The type of this distinct species was collected by Carl Axel Magnus Lindman (no. A.3505) — in whose honor it is named — in sandy soil on a shrubby campo at Morro Vermelho near Diamantina, Matto Grosso, Brazil, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. Briquet (1904) says of this plant: "Cette très élégante espèce se place dans la section *Rhodolippia* près du *L. lupulina* Cham., dont elle se distingue cependant considérablement par la forme et l'indument des feuilles ternées, les capitules coniformes à la fin, la corolle à tube genicule, etc. Le *L. primulina* S. Moore a aussi des feuilles largement arrondies, mais le mode de végétation (tiges courtes à entrenoeuds allongés, portant quelques paires de feuilles, sortant d'une grosse souche ligneuse), la forme et les dimensions de capitules, le calice plus tubuleux, le tube corollin à peine incurvé en font un espèce très différente."

Lippia lindmanii has been found on shrubby campos, in sandy soil, and on plateaus in forests, at 200 meters altitude, flowering in May and July. Material has been misidentified and distributed in herbaria as *L. lupulina* Cham.

In all, 4 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: BRAZIL: Matto Grosso: Lindman A.3505 (F—photo of type, N—iso-type, N—photo of type, S—type, Si—photo of type, Z—photo of type). BOLIVIA: Santa Cruz: Bourke-Borrowes s.n. [Santiago, 1928] (K); Kuntze s.n. [Velasco, 200 m., 7.1892] (W—701989).

LIPPIA LINEARIS H.B.K., Nov. Gen. & Sp. Pl., ed. quart., 2: 262. 1818.

Synonymy: *Lippia linearis* Humb. apud Spreng. in L., Syst. Veg., ed. 16, 2: 751. 1825. *Lippia linearis* Humb. & Bonpl. apud Steud., Nom. Bot., ed. 2, 2: 54. 1840. *Lippia linearis* Humb. & Kunth apud D. Dietr., Syn. Pl. 3: 596. 1843. *Lippia linearis* Kunth apud Schau. in A. DC., Prodr. 11: 586. 1847.

Bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. quart., 2: 262. 1818; Spreng. in L., Syst. Veg., ed. 16, 2: 751. 1825; Steud., Nom. Bot., ed. 2, 2: 54. 1840; D. Dietr., Syn. Pl. 3: 596. 1843; Walp., Repert. Bot. Syst. 4: 48. 1845; Schau. in A. DC., Prodr. 11: 586. 1847; Bocq., Adansonia 3: 244. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 31 & 95. 1942; Moldenke, Bol. Soc. Venez. Cienc. Nat. 11: 45. 1947; Moldenke, Alph. List Cit. 2: 573. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 63 & 190. 1949; Moldenke, Résumé 71 & 462. 1959; Moldenke, Résumé Suppl. 8: 5. 1964; Moldenke, Phytologia 12: 24. 1965.

An erect subshrub, about 15 cm. tall, branched; stems suffrutescent, erect; branches tetragonal, glabrous, glaucescent; leaves

decussate-opposite, sessile, connate at the base; leaf-blades rather thick, linear, about 2.5 cm. long, 3--4 mm. wide, acute at the apex, entire, narrowed at the base, appressed-strigose on both surfaces, glaucescent, 1-veined; inflorescence shorter than the leaves, axillary, solitary, pedunculate; peduncles 1 cm. long, angulate, appressed-strigose; heads ovate, about the size of a small pea, bracteate; bractlets ovate-oblong, acute at the apex, shorter than the flowers, pilose on the outside; flowers minute, dense; calyx compressed, bifid, the lobes acute at the apex, pilose on the back; corolla white, the tube equaling the calyx, ampliate above, the limb 2-lipped, flat, the upper lip emarginate-bilobed, the lower lip larger and 3-lobed, the lobes rounded; stamens 4, didynamous, inserted in the corolla-throat, included; style short; stigma obliquely capitate; ovary subovate, glabrous; fruit dry, obovate, the size of a poppy seed, rather compressed, 2-celled, smooth, glabrous, dark, separating into 2 parts, at the bottom of the calyx, the cells 1-seeded.

The type of this puzzling species was collected by Friedrich Heinrich Alexander von Humboldt and Aimé Jacques Alexandre Bonpland in sandy places near Cumana, Sucre, Venezuela, flowering in July, and is deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris, where it was photographed by Macbride as his type photograph number 39484.

Schauer (1847) places the species in his Section Zapania, Subsection Axilliflorae. The type was not collected in Colombia as indicated by me in my 1947 publication, where I was misled by the "Index Kewensis" citing it to "N. Granat." The species is known to me only from the literature and the 4 mounted photographs of the type specimen examined by me.

Citations: VENEZUELA: Sucre: Humboldt & Bonpland s.n. [Macbride photos 39484] (It--photo of type, Kr--photo of type, N--photo of type, W--photo of type).

LIPPIA LONGEPEDUNCULATA Kuntze, Rev. Gen. Pl. 3 (2): 253. 1898.

Synonymy: Lippia heterophylla Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 313--314. 1904. Lippia heterophylla var. ciliatifolia Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 314. 1904. Lippia ciliatifolia Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 314, in syn. 1904.

Bibliography: Kuntze, Rev. Gen. Pl. 3 (2): 253. 1898; Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 313--314. 1904; Briq. in Chod. & Hassler, Pl. Hassler. 2 (11): 495. 1904; Thiseit.-Dyer, Ind. Kew. Suppl. 2: 106. 1904; Prain, Ind. Kew. Suppl. 3: 104. 1908; Moldenke, Lilloa 5: 423 (1940) and 8: 424. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37, 41, & 95. 1942; Moldenke, Alph. List Cit. 1: 12, 27, 201, & 263 (1946) and 2: 370 & 628. 1948; Moldenke, Lilloa 14: 42 & 43. 1948; Moldenke, Alph. List Cit. 4: 1165. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80, 99, & 170. 1949; Moldenke, Résumé 93, 116, 461, & 462. 1959; Troncoso, Bol. Soc. Argent. Bot. 9: 184. 1961; Troncoso, Darwiniana 12: 258, 259, & 273--275, pl. 3. 1961; Moldenke, Résumé Suppl. 5: 5 & 7 (1962)

and 8: 4. 1964; Moldenke, *Phytologia* 12: 24. 1965.

Illustrations: Troncoso, *Darwiniana* 12: 274, pl. 3. 1961.

Dwarf subshrub, 5--40 cm. tall, suffrutescent, dioecious; stems oblique, thick, woody; branches indurated at the base, sparsely pilose toward the apex with antrorse strigose hairs; leaves decussate-opposite, heteromorphous, sessile; lower leaf-blades ovate, usually about 4 cm. long and 2 cm. wide (or smaller), rather acute to more or less obtuse at the apex, rather convex along the margins, rounded at the base, the upper ones considerably narrower, lanceolate, usually about 3 cm. long and 1--1.5 cm. wide (or even more reduced), acuminate at the apex, only somewhat convex (especially below the middle) along the margins, shortly rounded-constricted at the base, all dark-green, rather thickly fleshy, sparsely short-strigose with appressed hairs on both surfaces, not scabrous, penninerved, with a few inconspicuous lateral veins, entire or rarely with 1 or 2 acute teeth on the upper leaves, sometimes beautifully long-ciliate along the margins; inflorescence axillary, very long-pedunculate, many times longer than the leaves; peduncles 3--10 cm. long, slender, tetragonal, short-pilose with antrorse strigose hairs; heads subspheric or spherico-ovoid, 7--12 mm. long, about 7 mm. wide, more or less canescent; bractlets broadly ovate or lanceolate, short-acuminate at the apex, strigose-pubescent or canescent on the outer surface, the lower ones about 4 mm. long and 3--4 mm. wide, slightly surpassing the flowers, the others about equaling the flowers; flowers of 2 types, functionally staminate and pistillate; calyx minute, usually less than 1 mm. long, campanulate, densely strigose-pubescent outside during anthesis, obscurely subbilabiate, the lobes subentire; corolla hypocrateriform, yellow to orange or rose, sometimes partly red and partly yellow or at first yellow and finally orange, exserted 2--3 mm. from the calyx, the tube densely puberulent above, the limb densely puberulent, the lobes ovate, small, the anterior one larger; pyrenes large, about 2 mm. long and 1.5 mm. wide, separating with the closely appressed and densely whitish-tomentose calyx segments.

The type of this interesting species was collected by Carl Ernst Otto Kuntze at Concepcion, Paraguay. The type of *L. heterophylla* and its variety *ciliatifolia* was collected by Benedict Balansa (no. 1038) in hard sand at Campo Grande between Lague and La Trinidad, Paraguay, on May 12, 1875, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva, where it was photographed by Macbride as his type photograph number 24654.

Briquet (1904) says of his plants: "Cette remarquable espèce se place à côté du *L. longepedunculata* O. Kuntze.....dont elle possède les capitules très longuement pédonculés, et les feuilles entières très peu charnues et à nervation peu apparente. Mais elle s'en écarte complètement par ses feuilles hétérophylles, ses bractées ovées (et non pas lancéolées). M. O. Kuntze, dont la description est d'ailleurs insuffisante, en tous cas beaucoup trop sommaire, ne dit rien du calice, ce qui nous faire croire que

le L. longepedunculata ne possède pas les remarquables calices tomenteux du L. heterophylla. L'auteur compare son espèce à un 'L. graminifolia', espèce qui nous est inconnue. Peut-être est-ce la un lapsus pour 'angustifolia'. M. Kuntze a malheureusement négligé de nous dire de quel auteur était ce L. graminifolia."

Of the variety ciliatifolia he says: "Nana, foliis secus margines pulchre longeque ciliatis. Capitula minus canescentia. Bracteae angustiores, extus potius strigoso-pubescentes quam canescentes. Calix sub anthesi strigoso-pubescent, maturus ignotus. Cette plante curieuse ne nous est connue que par un petit échantillon mélangé avec L. heterophylla. Peut-être s'agit-il la d'une espèce différente (c'était notre premier impression), mais les matériaux sont insuffisants pour qu'on puisse se faire une opinion raisonnée à ce sujet. C'est une forme qui mérite d'être recommandée à la sollicitude des collecteurs."

Troncoso (1961) says: "Briquet, al describir su L. heterophylla, señala su gran afinidad con L. longepedunculata O. Ktze. Sin embargo, la diferencia de esta especie por la heterofilia y por sus brácteas ovales (lanceoladas en L. longepedunculata). Además, hace notar que O. Kuntze en su diagnosis no se refiere para nada al cáliz, lo que hace sugerir que dicha especie no posee el notable cáliz tomentoso de L. heterophylla. El estudio detenido del tipo de L. heterophylla me ha permitido descubrir que se trata de una especie dioica. El ejemplar Balansa 1038, del Herb. de Ginebra, es ♂ y sus caracteres florales coinciden en un todo con la descripción de O. Kuntze. En cambio el ejemplar Hassler 7347, del mismo herbario, posee pies ♂ y ♀, las flores ♂ presentan brácteas lanceoladas y su cáliz está reducido a dos pequeñísimas escamitas, inconspícuas, membranáceas.....Esto indicaría porque no fue observado por O. Kuntze y de ahí su falta de mención del mismo. Probablemente su ejemplar era ♂. En cuanto al carácter de la heterofilia señalado por Briquet para su L. heterophylla, éste es poco marcado y puede muy bien haber pasado desapercibido por O. Kuntze.....Estas observaciones de los ejemplares ♂ y ♀ me permiten establecer esta sinonimia con bastante fundamento, a pesar de no haber visto el tipo de L. longepedunculata O. Kuntze."

It should be noted that the bibliographic reference, Briq. in Chod. & Hassler, Plant. Hassler. 2 (11): 495, is cited in the Instituto Miguel Lillo as "Plantae Hasslerianae XI (1904) 495."

The species has been found growing in hard sand and in sandy fields, flowering in January, February, May, September, and November. Anisits describes it as "very common on the campo". The flowers are described as "petals yellow or rose" on T. Rojas 2540, "petals partly red, partly yellow" on Hassler 7347, and "at first yellow, later orange" on Anisits 2531. Material has been misidentified and distributed in herbaria under the name Lantana turnerifolia Cham. Troncoso (1961) cites from Paraguay: Balansa 1038 (Cb); Hassler 2592 (Bm, Cb, K, P), 7347 (Bm, Cb, K, P, X); T. Rojas 2540

(Si).

In all, 18 herbarium specimens and 9 mounted photographs, including type or phototype material of all the names involved, have been examined by me.

Citations: BRAZIL: Matto Grosso: Archer & Gehrt 91 (N, Sp-36448, W--1740790). PARAGUAY: Anisits 2531 (S); Balansa 1038 [Macbride photos 24654] (It--photo, Kr--photo, N--photo, N--photo, W--photo); Fiebrig 4773 (Cb, Cb, N, N--photo, Z--photo); Hassler 1234 (N), 2592 (N, N--photo, V, Z--photo), 7347 (Ca--944343, M1, N, N, S); Kuntze s.n. [Concepcion de Paraguay] (N--isotype); T. Rojas 2540 [Herb. Osten 18189] (Ug), s.n. [Hassler 2592] (S).

LIPPIA LOPEZII Moldenke, *Phytologia* 9: 187. 1963.

Bibliography: Moldenke, *Phytologia* 9: 187. 1963; Moldenke, *Résumé Suppl.* 7: 4. 1963; Hocking, *Excerpt. Bot. A.* 7: 454. 1964; Moldenke, *Biol. Abstr.* 45: 2772. 1964; Soukup, *Biota* 5: 194. 1964.

Small shrub, apparently considerably branched; branches slender, brownish, obtusely tetragonal and margined, striate-sulcate between the angles, minutely puberulent; branchlets very slender, tetragonal, margined, puberulent; principal internodes rather uniformly 1--1.5 cm. long; leaves decussate-opposite, sometimes somewhat fasciculate, sessile or subsessile, thick-textured, obovate, 6--10 mm. long, 3--4 mm. wide, obtuse or subacute and sparsely denticulate at the apex, rather cuneately narrowed and entire at the base, minutely white-strigillose on both surfaces, rather more densely so beneath; midrib usually impressed above and prominent beneath, the remainder of the venation obscure; inflorescence axillary, opposite, sessile or subsessile, capitate, many-flowered, grayish-puberulent throughout; corolla hypocrateriform, about 5 mm. long, white, densely white-strigose outside.

The type of this rare species was collected by H. Arnaldo López Miranda -- in whose honor it was named -- and A. Sagástegui A. (no. 3426) on a dry rocky slope between Huaylillas and Tayabamba, in the province of Pataz, La Libertad, Peru, at an altitude of 2350 meters, on May 21, 1961, and is deposited in the H. N. Moldenke Herbarium at Yonkers, New York. The species is known thus far only from the type specimen.

Citations: PERU: La Libertad: López Miranda & Sagástegui 3426 (Z--type).

LIPPIA LORENTZII Moldenke, *Alph. List Invalid Names Suppl.* 1: 14, hyponym (1947), *Phytologia* 2: 415. 1948.

Synonymy: *Lippia geminata* var. *lanceolata* Griseb., *Abhand. Königl. Gesell. Wissen. Götting.* 24: [Symb. Fl. Argent.] 278. 1879. *Lippia globiflora* η *lanceolata* Griseb. ex Kuntze, *Rev. Gen. Pl.* 3 (2): 252. 1898. *Lippia globiflora* η *lanceolata* f. *incana* Kuntze, *Rev. Gen. Pl.* 3 (2): 252. 1898. *Lippia globiflora* var. *lanceolata* Griseb. ex Moldenke, *Carnegie Inst. Wash. Publ.* 522: 165, in syn. 1940. *Lippia globiflora* var. *lanceolata* f. *incana* Kuntze ex Mol-

denke, Lilloa 5: 419, in syn. 1940. Lippia globiflora \ lanceolata (Griseb.) Kuntze ex Moldenke, Alph. List Invalid Names Suppl. 1: 14, in syn. 1947. Lippia geminata var. lanceolata f. incana Kuntze ex Moldenke, Alph. List Invalid Names Suppl. 1: 14, in syn. 1947.

Bibliography: Griseb., Abhand. König. Gesell. Wissen. Götting. 24: [Symb. Fl. Argent.] 278. 1879; Kuntze, Rev. Gen. Pl. 3 (2): 252. 1898; Moldenke, Carnegie Inst. Wash. Publ. 522: 165. 1940; Moldenke, Lilloa 5: 419. 1940; Moldenke, Alph. List Invalid Names Suppl. 1: 14. 1947; Moldenke, Phytologia 2: 415. 1948; Moldenke, Castanea 13: 118. 1948; Moldenke, Lilloa 14: 44. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 105 & 190. 1949; Moldenke, Alph. List Cit. 3: 673. 1949; Troncoso, Darwiniana 10: 78-80, fig. 4. 1952; E. J. Salisb., Ind. Kew. Suppl. 11: 138. 1953; Moldenke, Résumé 125, 312, & 462. 1959; Moldenke, Résumé Suppl. 7: 6 (1963) and 11: 7. 1964.

Illustrations: Troncoso, Darwiniana 10: 79, fig. 4. 1952.

Small shrub, about 60 cm. tall, branched from the base; stems apparently much branched and irregular, gray; branches cylindric, gray and glabrous below, obscurely tetragonal and subcanescent toward the apex; branchlets slender, obtusely tetragonal, canescent-strigillose; nodes rather indistinctly annulate; principal internodes abbreviated or medium in length, 0.5-6 cm. long; leaves decussate-opposite or rarely ternate, often clustered on very short twigs; petioles very slender, 1-7 mm. long or obsolete, densely canescent-strigillose; leaf-blades small, lanceolate-elliptic or elliptic-lanceolate, 0.5-4.6 cm. long, 3-18 mm. wide, acute at the apex, uniformly serrulate or acute-serrate almost to the long-attenuate or cuneate base, densely canescent-strigillose or incanous-pubescent on both surfaces, triplinerved, the teeth generally with revolute margins, the slender midrib and secondaries more or less impressed above and very prominent beneath; inflorescence axillary, 1 per leaf-axil, 2 per node; peduncles very slender, 4-10 mm. long, densely pubescent or canescent-strigillose; spikes elongate-capitate, about 1 cm. long in anthesis, oval to subcylindric and to 1.8 cm. long in fruit; bractlets oval or ovate, concave, imbricate in many series, 2.5-5.6 mm. long, 1.8-2.2 mm. wide, acuminate at the apex, 1-3-veined, densely pubescent or canescent-strigose and ciliate; calyx 2-lipped, obscurely and irregularly 1- or 2-dentate, densely pubescent, persistent in fruit, easily separating into 2 halves; corolla hypocrateriform, lilac, 4-5.5 mm. long, 2-lipped, pubescent outside, the lower lobe recurved, 3-lobulate, the central lobule crisped, the lateral ones smaller, subtriangular, the upper lobe about half as long, plainly 2-lobulate, the tube ampliate toward the apex, pubescent on the outside above; stamens 4, didynamous, included, inserted at the middle of the corolla-tube; stigma apical, oblique; ovary oval, glabrous, 2-celled, each cell 1-ovulate; fruit dry, obovoid, 2-2.2 mm. long, 1.8-2 mm. wide, glabrous, covered by the persistent calyx, the pericarp dilated on the upper half to form a soft, spongy tissue, the lower half fer-

tile, narrowed, osseous; seeds small, oval, without endosperm.

The type of this species was collected by Paul Günther Lorentz -- in whose honor it was named -- and Georg Hans Emmo Wolfgang Hieronymus at Dragones, Salta, Argentina, in the middle of August, 1873, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. The type of L. globiflora η lanceolata f. incana was gathered by Hieronymus at Oran, Salta, Argentina, and is described by Kuntze merely as "Folia utrinque incana". The type of L. geminata var. lanceolata is Lorentz & Hieronymus 580 from Salta.

Regarding the spongy tissue on the fruit, Troncoso (1952) says: "Ese tejido esponjoso hace al fruto muy liviano, facilitando su diseminación, pues flota fácilmente en el agua." She also notes that "El ejemplar que sirvió a Moldenke para describir la especie, cuyo isotipo se halla en el Museo de Córdoba, es muy pobre, aparentemente comido por animales. Se halla formado totalmente por ramitas muy breves, con hojas reducidas y agrupadas. Habiendo podido estudiar un ejemplar completo, no mutilado (Burkart 6792), he considerado útil dar una descripción enmendada de la especie, ampliando además el área de distribución conocida. El material examinado, que incluye un isotipo de Lippia geminata var. lanceolata Gris., me ha permitido establecer la identidad de dicha variedad con la especie de Moldenke, la cual indudablemente es muy vecina de Lippia geminata O. Ktze. Lippia Lorentzii pertenece a la Secc. Zapania Sch., caracterizada por presentar capítulos que se alargan durante la floración, brácteas imbricadas, pluriseriadas, cóncavas o planas, que cubren el cáliz, éste brevemente tubuloso, membranáceo, comprimido-carenado pero no alado." She cites from Corrientes: Burkart 6792 (Si) and from Salta: Lorentz & Hieronymus 580 (Cd), s.n. [Bei Dragones, Mitte VIII, 1873] (Cd-isotype); Venturi 5124 (Si).

Most of the Grisebach and Kuntze trinomials and quadrinomials cited in the synonymy above were hitherto regarded by me in previous publications as applying to the polymorphic L. alba (Mill.) N. E. Br.

In all, 5 herbarium specimens, including the types of most of the names involved, and 8 mounted photographs have been examined by me.

Citations: ARGENTINA: Salta: Lorentz & Hieronymus s.n. [Bei Dragones, Mitte VIII, 1873] (Ag--photo of isotype, F--photo of type, F--photo of isotype, N--isotype, N--isotype, N--photo of type, N--photo of isotype, S--type, Si--photo of type, Ug--isotype, Z--photo of type, Z--photo of isotype); Venturi 5124 (W--1591459).

LIPPIA LUCENS Standl., Trop. Woods 37: 30--31. 1934.

Bibliography: P. C. Standl., Trop. Woods 37: 30--31. 1934; A. W. Hill, Ind. Kew. Suppl. 9: 161. 1938; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 20 & 95. 1942; Moldenke, Phytologia

2: 384. 1947; Moldenke, Alph. List Cit. 2: 351 (1948), 3: 973 (1949), and 4: 1152 & 1255. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 35, 37, & 190. 1949; Moldenke, Phytologia 5: 95. 1954; Moldenke, Résumé 42, 44, & 462. 1959.

Branched aromatic shrub or small tree, to 6.9 m. tall; trunk to 10 cm. in diameter; branches slender, subterete, brown, scabrous-hirtellous and densely elevated-punctate; principal internodes half as long as the subtending leaves; leaves medium in size, short-petiolate; petioles heavy, 3--7 mm. long; leaf-blades coriaceous, firm and stiff, dark-green above, paler beneath, elliptic-oblong or lanceolate-oblong, 7--9 cm. long, 2--3 cm. wide, narrowed to the acute or subobtuse apex, crenate and more or less revolute-margined, cuneate-attenuate and decurrent into the petiole at the base, bullate-rugose and shiny, roughly hirtellous-scabrous above, viscid-puberulent beneath and roughened especially on the hirtellous-scabrous venation, the venation deeply impressed above, conspicuously prominent beneath; inflorescence very short-spicate, two in the leaf-axils; peduncles slender, 2--2.5 cm. long, hirtellous-scabrous and glandular-puberulent; spikes capitate, 10--12 mm. long and almost as wide; bractlets broadly ovate or rounded-ovate, acuminate at the apex, slightly scabrous or subglabrous, scabrous-ciliate along the margins, the lowest to about 8 mm. long, the upper gradually smaller, hardly accrescent after anthesis; calyx 2 mm. long, densely hirtellous, the teeth very short, triangular, acute at the apex; corolla hypocrateriform, pale-yellow; fruit broadly obovoid, 1.8 mm. long, 2-sulcate, smooth, shiny.

The type of this species was collected by J. B. Edwards (no. P.514) at an altitude of 1110 meters in an open mountain forest at Siguatepeque, Comayagua, Honduras, on November 10, 1932, and is sheet number 686991 in the herbarium of the Chicago Natural History Museum, with an isotype in the herbarium of the Arnold Arboretum in Cambridge, Massachusetts.

Standley says of this species "Of the alliance of Lippia umbellata Cav., a group badly in need of critical revision; apparently a form worthy of specific rank, and at least unlike any other Mexican or Central American material that has come to the writer's attention." It has been collected on streambanks, the lower slopes of cloud forests, in open mountain woods, and in wet ravines, at altitudes of 1110 to 1500 meters, flowering in July and August, fruiting in November. Material has been misidentified and distributed in herbaria under the names L. kellerianii Greenm. and L. substrigosa Turcz. A note on the Gray Herbarium isotype indicates that there is a specimen of this collection in the Wood Collection there. Standley 26473 exhibits a number of insect galls.

In all, 18 herbarium specimens, including type material, and 6 mounted photographs have been examined by me.

Citations: GUATEMALA: Chiquimula: Steyermark 31596 (F--1039553, N--photo, Z--photo). HONDURAS: Choluteca: Williams & Molina R.

10802 (G). Comayagua: J. B. Edwards 514 (F--photo of isotype, G--isotype, N--photo of isotype, N--photo of isotype, S--isotype, Z--photo of isotype); Yuncker, Dawson, & Youse 6003 (G, S, St), 6387 (G, N, S). Morazán: Molina R. 549 (G), 568 (G), 1134 (G), 1456 (G), 1837 (G), 3213 (G); P. C. Standley 13668 (N), 26473 (G).

LIPPIA LUPULIFORMIS Moldenke, *Phytologia* 2: 470. 1948.

Bibliography: Moldenke, *Phytologia* 2: 470 & 483 (1948) and 3: 137 & 138. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 117, 118, 122, & 190. 1949; E. J. Salisb., *Ind. Kew. Suppl.* 11: 138. 1953; Moldenke, *Résumé* 145, 146, 154, 314, & 462. 1959.

Shrub or subshrub, to 1.5 m. tall; branchlets slender, acutely tetragonal and grayish, pustulate-asperous, the younger parts and twigs rather densely substrigose with whitish bulbous-based hairs and densely resinous-granular, brownish; leaf-scars elevated on conspicuous divergent sterigmata; buds densely white-villous; nodes annulate on the young twigs, not annulate on older branches; principal internodes 1.2--3.2 cm. long on older branchlets, abbreviated to 2--9 mm. on twigs; leaves decussate-opposite or rarely ternate or approximate; petioles slender, 1--5 mm. long, rather densely substrigose-villosulous and resinous-granular, margined, deeply canaliculate above; leaf-blades chartaceous, dark-green above, lighter beneath, ovate, 1.7--3.5 cm. long, 0.9--2 cm. wide, rounded or subacute at the apex, acute or acuminate at the base or sometimes rounded, very scabrous and bullate above, densely short-pubescent on both surfaces, densely resinous-granular beneath, uniformly serrate-dentate from the base to the apex, the teeth often decidedly revolute-margined; midrib impressed above, prominulous beneath; secondaries very slender, about 5 per side, ascending, hardly arcuate, impressed above, prominulous beneath; vein and veinlet reticulation abundant, usually deeply impressed above and prominulous beneath; inflorescence spicate, axillary, surpassing the subtending leaf, 1 or 2 per node; peduncles slender, 4--6.5 cm. long, asperous-hirsutulous and resinous-granular, tetragonal; spikes at first capitate, later elongating to 2 cm., 1.5--2 cm. wide, strobiliform, densely many-flowered; bractlets large and conspicuous, densely imbricate, ovate, 8--10 mm. long, 4--7 mm. wide, acute or subacuminate at the apex, rather sparsely strigillose and granular; corolla white, the tube 6--7 mm. long, densely gray-pubescent on the outside, the limb 4--5 mm. wide.

The type of this species was collected by H. Rudatis (no. 1145) at G'Merrum, at an altitude of 650 meters, Dumisa, in the district of Alexandra, Natal, South Africa, on September 11, 1910, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. The plant is said by the Hornbys to be "common" in deciduous scrub in Tanganyika. It has been found in deciduous woods at altitudes of 650 to 1600 meters, flowering in January, March, September, November, and December. Material has been misidentified and distributed in herbaria under the names *L. asperifolia* A. Rich., *L. plicata* J. G. Baker, and *L. somalensis* Vatke.

In all, 8 herbarium specimens, including the type, and 5 moun-

ted photographs have been examined by me.

Citations: TANGANYIKA: Hornby & Hornby 574 (K); A. Peter 580 [O.I.19] (B), 2122 [O.I.54] (B), 51797 [O.54] (B). KENYA: Dummer 5046 (K). ANGOLA: Huila: E. Santos 105 (U1). SOUTH AFRICA: Natal: Rudatis 1145 (F--photo of type, K--photo of type, N--isotype, N--photo of type, S--type, Si--photo of type, Z--photo of type).

LIPPIA LUPULINA Cham., Linnaea 7: 222--223. 1832.

Synonymy: Lippia claussoni Turcz., Bull. Soc. Nat. Mosc. 36 (2): 204. 1863. Lippia neriifolia Turcz. ex Hiern, Vidensk. Meddel. Kjøbenh. 1877-1878: 100, in syn. 1877. Lippia claussoni Turcz. apud Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894. Lippia bracteata Clausen ex Moldenke, Alph. List Invalid Names Suppl. 1: 13, in syn. 1947 [not L. bracteata Carr., 1881, nor Hort., 1894]. Lippia lupulina Cham. & Schlecht. ex Moldenke, Alph. List Invalid Names Suppl. 1: 14, in syn. 1947. Verbena lupulina Cham. ex Moldenke, Alph. List Cit. 2: 448, sphalm. 1948. Lippia lupulina var. minor Lfgr. ex Moldenke, Résumé 314, in syn. 1959. Rhodolippia lupulina Cham. ex Moldenke, Résumé 343, in syn. 1959. Lippia lupulina Charm. ex Moldenke, Résumé Suppl. 10: 6, in syn. 1964.

Bibliography: Cham., Linnaea 7: 222--223. 1832; Steud., Nom. Bot., ed. 2, 2: 54. 1840; D. Dietr., Syn. Pl. 3: 297. 1843; Walp., Repert. Bot. Syst. 4: 46. 1845; Schau. in A. DC., Prodr. 11: 592. 1847; Schau. in Mart., Fl. Bras. 9: 248. 1851; Turcz., Bull. Soc. Nat. Mosc. 36 (2): 204. 1863; Bocq., Adansonia 3: 244. 1863; Hiern, Vidensk. Meddel. Kjøbenh. 1877-1878: 100. 1877; Griseb., Abhand. Kaiser. Gesell. Wiss. Götting. 24: [Symb. Fl. Argent.] 279. 1879; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 151. 1895; Kuntze, Rev. Gen. Pl. 3 (2): 252. 1898; Briq. in Chod., Bull. Herb. Boiss., sér. 2, 2: 820. 1902; Briq. in Chod., Pl. Hassler. 1 (9): 199. 1902; Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 316. 1904; Briq., Arkiv Bot. Stockh. 2 (10): 21. 1904; Briq. in Chod. & Hassler, Pl. Hassler. 2 (11): 499. 1904; Hayek, Denkschr. Kaiser. Akad. Wissen. Math.-nat. 79: 296. 1908; Glaz., Bull. Soc. Bot. France 58, Mém. 3: 542. 1911; Molfino, Not. Bot. 2: 103. 1923; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37, 40, 41, & 95. 1942; Moldenke, Alph. List Cit. 1: 12, 27, 56, 90, 97, 106, 121, 171, 177, 196, 230, 238, 241, 255, 263, 289, & 290. 1946; Moldenke, Alph. List Invalid Names 13, 14, & 25. 1947; Moldenke, Phytologia 2: 386. 1947; Moldenke, Lilloa 14: 44. 1948; Rawitscher, Journ. Ecol. 36: 245 & 248. 1948; Moldenke, Alph. List Cit. 2: 362--370, 441, 448, 484, 485, 532--535, 550--553, 598, & 600 (1948), 3: 669, 670, 674, 689, 704, 751, 754, 764, 814, 816, 837, 838, 845, 847, 848, 856, 885, 921--923, 947, & 969 (1949), and 4: 1064, 1075, 1081, 1094, 1123--1125, 1132, 1134, 1135, 1153, 1165, 1167, 1180, 1203, 1204, 1221, 1235, 1247, 1249--1251, 1257, 1296, 1300, & 1302. 1949; Moldenke, Known Geogr. Dis-

trib. Verbenac., [ed. 2], 80, 97, 99, 105, 189, & 190. 1949; Rawscher, Bol. Univ. São Paulo Fac. Filos. C (7): 44. 1949; Moldenke, Phytologia 3: 287. 1950; Stellfeld, Trib. Farmac. 19 (10): 169. 1951; F. C. Hoehne, Ind. Bibl. & Num. Pl. Col. Com. Rondon 348. 1951; Angely, Fl. Paran. 7: 12. 1957; Moldenke, Résumé 93, 114, 116, 125, 311, 314, 343, 369, 461, & 462. 1959; Moldenke, Résumé Suppl. 1: 6, 19, & 25. 1959; Rennó, Levant. Herb. Inst. Agron. Minas 150. 1960; Angely, Fl. Paran. 16: 60 (1960) and 17: 46. 1961; Troncoso, Darwiniana 12: 258 & 259. 1961; Moldenke, Phytologia 8: 136. 1961; Moldenke, Résumé Suppl. 6: 6 (1963), 8: 4 (1964), and 10: 6. 1964; Moldenke, Phytologia 12: 24, 111, 160, & 165--167. 1965.

Perennial herb, semi-woody subshrub, or shrub, 30 cm. to 1.5 m. tall, summer-green, shallow-rooted, softly tomentose or villous throughout, with glanduliferous hairs intermixed; rootstock woody, turnip-shaped; stems very small, simple or branched above; branches obsoletely tetragonal; leaves decussate-opposite, sessile or short-petiolate; leaf-blades very variable in size and shape, ovate or broadly ovate to subrotund, usually 4--7.5 cm. long, 2.5--6.5 cm. wide, sometimes only 1.8 cm. long and 1.2 cm. wide, cordate or rounded to acute at the base, serrate or crenate-serrate along the margins, lineate-venose and rugose above, tomentose with velutinous or villous to hirtellous tomentum, with scattered or abundant glanduliferous hairs intermixed; peduncles stiff, axillary and solitary or congested-paniculate at the apex of the branches; heads hemispheric or subglobose during anthesis, about the size of a cherry at the start of anthesis and then with some of the larger exterior bracts involucrate, later about the size of a walnut and with all the bracts much enlarged; bracts broadly-ovate, equally imbricate, membranous, varying from lilac, purple, violet, or "red-blue" to red, rose, or pale-pink, equaling or surpassing the flowers during anthesis, many-veined, plinnerved, venose-reticulate, later increasing in size, often very wide, acuminate or finally acute at the apex, ciliate along the margins, pubescent; calyx bifid, very hirsute, the lobes obtusely 2-toothed; corolla hypocrateriform, varying from rose, rose-red, rose-lilac, or clear-rose, red, Bordeaux red, pink, or bright-pink to lavender, light-purple, purple, purple-violet, violet, lilac, "red-blue", "orchid-color", or blue, sometimes described [erroneously?] as yellow or white, more accurately as "lilac with the entrance to the tube yellow" or "with white limb and yellow throat", the tube 8 mm. long, curvate, ventricose below the middle and there bearing the didynamous stamens, broad, glandular-villous on the outside, pubescent in the throat, the limb 6 mm. wide, lightly velutinous, the lowest lobe subrotund, the others shorter; anthers with linear thecae, extrorsely arcuate; style and fruit typical of the genus, the latter winged by the adherent calyx, obcordate.

The type of this handsome and well-known species was collected by Friedrich Sellow (no. 2331) somewhere in Brazil and was deposited in the herbarium of the Botanisches Museum in Berlin, where it was photographed by Macbride as his type photograph num-

ber 17523, but is now destroyed. Lippia claussei is based on an unnumbered collection made by Peter Clausen -- in whose honor it was named -- in Minas Gerais, Brazil; L. bracteata Guil. is based on P. Clausen 609, also from Minas Gerais, deposited in the Britton Herbarium at the New York Botanical Garden, while L. bracteata Clausen is based on an unnumbered collection made between "Aug." [1839?] and "April 1840" in the same state by the same collector and deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels. Lippia lupulina var. minor is based on Löfgren s.n. [Herb. Com. Geogr. & Geol. 154; Herb. Inst. Bot. S. Paulo 15655], collected in São Paulo, Brazil, and deposited in the Britton Herbarium.

Schauer (1847) classifies L. lupulina in his Subsection B of Section Rhodolippia; Troncoso (1961) places it in her Subgenus Lippia, Section Rhodolippia.

Clausen's surname is often spelled "Claussen" in literature and on herbarium sheets.

Reiss says of this species "does not grow high, about 30 cm. at most". Schauer (1851) says: "Frutex pedalis--tripedalis, modo simplex, modo superne ramosus, in campis adhuc non crematis; in campis superrime crematis suffrutex vel herba (Riedel). Variat maximopere foliorum figura et amplitudine, nec non tomento magis velutino vel magis villosa vel magis hirtello, pilis glanduliferis copiosioribus et rarioribus.....Antherae didymae loculis linearibus extrorsum arcuatis. Stylus et fructus Lippiarum; hic calyce adhaerente velatus, obcordiformis. -- Quoad indumentum, foliorum et capitulorum magnitudinem eximie variat. Specimina alia villis longis canescunt; alia imprimis vetula et macra fere omnino calvescunt; alia pube tenera aequali mollescunt."

The plant has been found in fields, waste places, campos, dry or natural campos, high sandy uncultivated campos, campo cerrado, moist meadows, iron ore or Attalea palm areas, mato, and cerrado, on hills, and at the margins of woods, at altitudes of 425 to 1600 meters, flowering in every month of the year, fruiting in November. Mexia describes it as "occasional among tall grass", the Eitens found it in "cutover and burned campo cerrado, ground plowed for planting of pines, ground vegetation returning, grasses, herbs, small shrubs; soil poor, reddish-brown fine sand with a little clay", and Hassler encountered it on "collines pierreuses et incultes". Schauer (1851) says: "Crescit in copiose campis siccis graminosis petrorisque". Rawitscher (1948) refers to it: "For instance, Lippia lupulina, as I. Schauer, the author of the Verbenaceae in Martius' Flora, points out, is herb-like when collected in Campos that recently have been burnt, but where for a longer time fire has been excluded, it is a shrub."

As to the flower color, the flowers are described as "lavender or light-pink" on Reiss 12; "lilac" on Herb. Inst. Bot. S. Paulo 36774, 36780, & 37031; "violet" on Mendes Magalhães 1510; "purple-violet" on Hassler 7261; "red" on Hertel 7; "clear-rose" on Herb.

Inst. Bot. S. Paulo 3051; "rose" on Herb. Inst. Bot. S. Paulo 3632, 5321, & 23408, Kuntze s.n., J. E. Oliveira 1314, A. G. Schulz 7105, and Williams & Assis 5810, 6108, 6211, & 6618; "rose or rose-red" on Jørgensen 4585; "blue" on Williams & Assis 6273; "purple" on Assis 144, Eiten & Eiten 2273, L. O. Williams 5386, and Williams & Assis 5851; "Bordeaux red" on Anisits 2610; "pink" on Brade 5768; "red-blue" on Pickel 2724; "bright-pink" on Mexia 5871; "rose or lilac" on Machado de Campo 72; "rose-lilac" on Herb. Inst. Bot. S. Paulo 2476; "orchid-color" on Swallen 9518; "lilac with entrance to tube yellow" on Macedo 482; "white" on Herb. Inst. Bot. S. Paulo 36447; "white limb and yellow throat" on Pickel 2724; and "yellow" on Mendes Magalhães 4319 and Williams & Assis 6310, 6477, & 7099. I am wondering whether in some of these cases the collector isn't referring to the color of the bracts rather than of the corollas.

Glaziou 21902 does not look at all typical of this species, but is so cited by Glaziou (1911). It is obviously conspecific with Malme 1996 and 1996a, having tiny leaves, small heads, and big flowers. Malme 1996b & 1996c have the leaves more normal, but the heads are still small and the flowers large. Machado de Campo 72 does not appear to be typical either -- some of the leaves are oblong in shape!

Material of this species has been misidentified and distributed in herbaria under the names L. bracteosa Mart. & Gal., L. primulina S. Moore, and Melasanthus sp. On the other hand, the Urbina s.n. [Enero de 1886], distributed as L. lupulina, is L. callicarpae-folia H.B.K.; G. Gehrt s.n. [Herb. Inst. Bot. S. Paulo 4037] is the type collection of L. francensis Moldenke; G. A. Black 51-10973 and Regnell III.946 [7/1855] are L. gehrtii Moldenke; and Kuntze s.n. [Velasco, 200 m., 7.1892] is L. lindmanii Briq. Mulford & Foster 713 is a mixture with L. florida Cham.

Schauer (1851) cites collections by Lund, Martius, and Riedel from São Paulo, Brazil, by Sellow, Martius, Pohl, Riedel, Clausen 1034, and Vauthier 195 from Minas Gerais, by Pohl from Goiás, and by Lhotsky from Matto Grosso. He also cites the species from Chiquitos, Bolivia, but gives no collector's name. Hayek (1908) cites Campos Novaes s.n. [Campo Botucatu, XI.1896], Wacket s.n. [prope S. Caetano haud procul ab urbe Sao Paulo, 750-800 m.s.m.], and Wettstein & Schiffner s.n. [prope urbem Faxina, ca. 650 m.s.m. VIII.1901] from São Paulo. Stellfeld (1951) cites Freitas s.n. [Palmeira, Nov. '36; Herb. Paran. 3334], Stellfeld s.n. [Vila Velha, Out. '44; Herb. Paran. 1962], and Tessmann s.n. [Ponta Grossa, Lagoa Dourada, 7-2-48; Herb. Mus. Paran. 2999] from Paraná.

In all, 243 herbarium specimens and 7 mounted photographs, including type material or phototypes of most of the names involved, have been examined by me.

Citations: BRAZIL: Amazonas: J. G. Kuhlmann s.n. [Rio Tapajóz, Salto Iris, Jan. 1915; Herb. Comm. Linhas Telegr. 1302] (Sp—31978). Brasília: Heringer 7873 (N); E. Pereira 7400 [Herb. Brad. 26622] (N). Goiás: G. Gardner 3406 (Br); Glaziou 21902 (Br, Cm, N—photo, S); Macedo 3599 (N, S, W—2059743), 3653 (W—2059772). Mato Grosso: Archer & Gehrt s.n. [Capão Bonito, Sept. 5, 1936] (N, Sp—36447, W—1691991); Fabio 35 (Sp—42662, Sp); F. C. Hoehne Com. Rondon 1834 (Sp); A. Lutz 1390 (Lz); Malme 1996 (S), 1996a (S), 1996b (S), 1996c (S, S); Pilger 738 (Vt); J. E. Rombouts s.n. [Pedra, Oct. 11, 1938; Herb. Inst. Agron. Est. S. Paulo 2775] (Sp—41088, Sp); Herbert H. Smith s.n. (Ja—14876); Swallen 9518 (W—1903231). Minas Gerais: Assis 144 (G, N); Brade 13903 [Herb. Rio de Jan. 29538] (B); J. F. de Castro 67 (Sp—31295, Sp); P. Clausen 130 (Du—166589), 384 (Br), 609 (N), 1032 (Br), 1288 (N), s.n. [Aug.—April 1840] (Br, Br, Br); Glaziou 9536 (Bz—21776); Henschen III.1620 [10/10/1868] (W—201219); Heringer 3820 (B), 4008 (B), 5169 (B); F. C. Hoehne s.n. [Pouso Alegre, May 4, 1927] (N, Sp—19389); A. Lutz 939 (Lz); Macedo 482 (S, W—2195929), 1951 (S); Mello Barreto 3274 [Herb. Jard. Bot. Belo Horiz. 371] (N); Mendes Magalhães 1510 (Be—14568), 4319 [Herb. Jard. Bot. Belo Horiz. 45120] (N); Mexia 5871 (Ca—510132, W—1705024); Miers 2483 ["wrong number, 2477?"] (W—1421163); Mulford & Foster 713, in part (W—1779145); Murça Pires & Black 3356 (Be—63800); J. E. Oliveira 1314 [Herb. Jard. Bot. Belo Horiz. 45148] (N); Regnell I.131 [11—16/12/1848] (W—274924), I.331 [Caldas, June 2, 1865] (S), I.331 [Passoe, Caldas, August 14—19, 1865] (S), I.331 [Serra dos Cabretos, Caldas, March 2, 1867] (S, S), I.331d (S), I.531 [2/6/1865] (W—1322932), III.1620 [Caldas, Oct. 10, 1868] (S, S), III.1620 [Ventania, Caldas, Oct. 20, 1868] (N); L. B. Smith 6730 (W—2124666), 6780 (W—2124667), 6921 (W—2120218), 6942 (W—2124673), 7068 (W—2124675); Stephan s.n. [Congonhas do Campo, 1843] (Br); Warming 57 (N); Widgren 348 (S), 1232 (Br), s.n. [1845] (Lu, N), s.n. (S); L. O. Williams 5386 (G); Williams & Assis 5810 (G), 5851 (G, N), 6108 (G), 6211 (G), 6273 (G), 6310 (G, N), 6477 (G, N), 6618 (G, N), 6632 (G), 6927 (G), 7099 (G, N). Pará: Murça Pires, Black, Wurdack, & Silva 6256 (Bm, N). Paraná: Braga 29 [Herb. Mus. Paran. 1504] (Mp); Dombrowski 675 (Ac); Dombrowski, Saito, & Pereira 768/561/155 (Ac), 859/650/289 (Ac); Dusén 2419 (S), 7657 (S), 9062 (S), 10545 (S), 10570 (N, W—1481646), 10570a (S), 10650 (S), 19878 (S), 10915 (S), 13090 (S), s.n. [Villa Velha, March 13, 1904] (S), s.n. [Villa Velha, April 30, 1914] (S), s.n. [Jaguariahyva, Dec. 25, 1914] (S); Hatschbach 2568 (N); Hertel 7 [Herb. Mus. Paran. 1915] (N), 8 [Herb. Mus. Paran. 1962]; F. C. Hoehne s.n. [Ponta Grossa, Nov. 1, 1928] (N, Sp—23249), s.n.

[Jaguariahyva, Nov. 5, 1928] (N, Sp--23408); Jönsson 457a (S); Krieger 1015 (Sp--51456); Reiss 12 (I, I, S); Tessmann s.n. [Herb. Mus. Paran. 2999] (N). Rio de Janeiro: Herb. Rio de Jan. 31714 (N); A. Saint-Hilaire s.n. [Covalinho] (N, N). São Paulo: Brade 5768 (S), s.n. [Itarapina, Sept. 1921] (Sp--6719); Campos Novaes 929 (Sp--2217, W--389895); Dedecca 481 [Herb. Inst. Agron. S. Paulo 17711] (Ca--40289); Edwall s.n. [Bocucatú; Herb. Com. Geogr. & Geol. 1028] (N, Sp--15658); Eiten & Eiten 2273 (N, W--2369862); Eiten & Freitas Campos 3406 (W--2445184); Felippe 79 (W--2404949); A. Gehrt s.n. [Butantan, Nov. 20, 1918] (Sp--3051); G. Gehrt s.n. [Itarapina, Aug. 12, 1919] (Sp--3632); J. F. Gomes s.n. [Miguel Calmon, April 2, 1918] (Sp--1730); A. Hammar 13 (N, Sp--15647); F. C. Hoehne s.n. [Butantan, Capital, Sept. 22, 1917] (N, Sp--577), s.n. [Butantan, Oct. 14, 1918] (N, Sp--2476), s.n. [Butantan, Dec. 23, 1918] (Sp--2659), s.n. [Taubaté, Feb. 24, 1921] (Sp--5321), s.n. [Ipiranga, May 18, 1922] (Sp--7930), s.n. [Mogi-Mirim, May 21, 1927] (N, Sp--20437); W. Hoehne 838 (N, Wh, Wh), 2750 (Wh), s.n. [Campo Congonhas, 10/1941] (Wh); Hoehne & Gehrt s.n. [Campo Largo, Nov. 10, 1936] (N, Sp--36774), s.n. [Capella do Alto, Nov. 10, 1936] (N, Sp--36780), s.n. [Tatuhy, Dec. 1, 1936] (N, Sp--37031); Lufgren 98 (S), 154 (Cp, N, N--photo, Z--photo), s.n. [Itapetininga, Sept. 19, 1887; Herb. Com. Geogr. & Geol. 154] (N, Sp--15655), s.n. [Araraquara, Nov. 20, 1888; Herb. Com. Geogr. & Geol. 1028] (Sp--15644); Luederwaldt s.n. [Ipiranga, Nov. 1907; Herb. Mus. Paulista 82] (N, Sp--15653); Machado de Campos 72 (W--2369483); Martius 1034 (M); Mimura 14 (W--2445185); Moldenke & Moldenke 19668 (N); Mosén 1529 (S), 3909 (N, S, Sp--6715); Navarro de Andrade s.n. [Araras, Nov. 29, 1929] (Sp--24518); Pickel 2724 (N, Sf); Rachid s.n. [Emas, Dec. 3, 1944] (Sp--53617); Riedel & Lund 1450 (N); A. Russel 18 (N, Sp--20078); Santoro, Krug, Costa, & Zagatto s.n. [Fazenda Campo Grande, Campinas, Dec. 18, 1938; Herb. Inst. Agron. Est. S. Paulo 3289] (Be--35654); Usteri s.n. [Avenida Paulista, Capital, Nov. 18, 1906] (Sp--15664); A. P. Viégas s.n. [Cascavel, Sept. 27, 1939; Herb. Inst. Agron. Est. S. Paulo 5076] (Sp--44301, Sp), s.n. [Cascavel, Sept. 27, 1939; Herb. Inst. Agron. Est. S. Paulo 5078] (Sp--44302, Sp); Viégas & Zagatto s.n. [Campinas, Dec. 4, 1938; Herb. Inst. Agron. Est. S. Paulo 3128] (Sp--41087, Sp, W--1459557), s.n. [Mogi-Mirim, June 2, 1939; Herb. Inst. Agron. Est. S. Paulo 4600] (Sp--44307, Sp), s.n. [Mogi-Mirim, June 2, 1939; Herb. Inst. Agron. Est. S. Paulo 5110] (Sp--44304, Sp). State undetermined: P. Clausen s.n. (Z--photo); Collector undesignated 235 [Herb. Inst. Bot. S. Paulo 20074] (N), 236 (Sp--20074), s.n. (Sp--15650); Dupré s.n. [Brésil méridional, 1842] (B, N); Raben 514 (Br, Br), 766 (Br, Br), 819 (Br), 875 (Br); Sel-

low 2331 [Brasilia; Macbride photos 17523] (Br--isotype, Kr--photo of type, N--photo of type, Vt--isotype, W--photo of type). BOLIVIA: Santa Cruz: Bourke-Borrowes 86 (K); M. Cárdenas 5638 (W--2429777); Kuntze s.n. [Ost-Velasco, VII.92] (N); d'Orbigny 897 (Br). PARAGUAY: Anisits 2610 (S); Fiebrig 6352 (W--1159380); Hassler 1859 (N, N), 7261 (Ca--944314, N, S); Jürgensen 4585 (Du--290311, S, W--1573102). ARGENTINA: Misiones: Ekman 2016 (Mi, S); Quiroga 329 [Herb. Osten 6985] (Ug), s.n. [San Ignacio, August 28, 1913; Herb. Mus. Argent. Cienc. Nat. 23852] (N, Ra--23851); A. G. Schulz 7105 (N, Z).

LIPPIA LUPULINA var. ALBIFLORA Troncoso, Darwiniana 12: 258 & 289--291. 1961.

Synonymy: Lippia paraguariensis Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1163--1164. 1904.

Bibliography: Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1163--1164. 1904; Briq. in Chod. & Hassler, Pl. Hassler. 2 (11): 499. 1904; Prain, Ind. Kew. Suppl. 3: 104. 1908; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 41 & 96. 1942; Moldenke, Lilloa 8: 425 (1942) and 10: 378--379. 1944; Moldenke, Alph. List Cit. 1: 264 (1946) and 3: 693. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 99 & 190. 1949; Moldenke, Résumé 117 & 462. 1959; Troncoso, Darwiniana 12: 258 & 289--291, pl. 4, fig. 17. 1961; Moldenke, Résumé Suppl. 5: 5--7. 1962.

Illustrations: Troncoso, Darwiniana 12: 290, fig. 17, & pl. 4. 1961.

This variety differs from the typical form of the species in having white corollas.

The type of the variety was collected by Emil Hassler (no. 7802) in fields in the region of the upper course of the Río Apa, Paraguay, in November, 1902, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva, where it was photographed by Macbride as his type photograph number 24656. It is very possible that the Archer & Gehrt s.n. [Capão Bonito, Set. 5, 1936], from Matto Grosso, Brazil, cited above under typical L. lupulina Cham., may be this variety, since it is described as having had white flowers. Pickel 2724, from São Paulo, is described as having had corollas with "white limb and yellow throat", while Mendes Magalhães 4319 and Williams & Assis 6310, 6477, & 7099 are said to have had "yellow" flowers. Whether these belong here, too, is not at all clear until the exact color of the corollas [as distinct from the bracts] in the typical form is established.

In all, 1 herbarium specimen and 4 mounted photographs of the type collection have been examined by me.

Citations: PARAGUAY: Hassler 7802 [Macbride photos 24656] (It--photo of type, Kr--photo of type, N--isotype, N--photo of isotype, W--photo of type).

LIPPIA LUPULINA var. PARAGUARIENSIS Chod., Bull. Herb. Boiss., sér. 2, 2: 820. 1902.

Synonymy: Lippia renifolia Turcz., Bull. Soc. Nat. Mosc. 36 (2): 204. 1863.

Bibliography: Turcz., Bull. Soc. Nat. Mosc. 36 (2): 204. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Chod., Bull. Herb. Boiss., sér. 2, 2: 820. 1902; Chod., Pl. Hassler. 1 (9): 199. 1902; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 96. 1942; Moldenke, Alph. List Cit. 1: 223 (1946) and 3: 693. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 190. 1949; Moldenke, Phytologia 3: 289. 1950; Moldenke, Résumé 94, 116, & 462. 1959; Troncoso, Darwiniana 12: 258. 1961; Moldenke, Résumé Suppl. 11: 4. 1964.

This variety differs from the typical form of the species in having its leaves smaller and more deeply cordate at the base.

The variety was based by Chodat on three collections made by Emil Hassler in Paraguay -- nos. 4335, 4557, and 5098. Lippia renifolia was based on George Gardner 4336, collected in 1841 in the state of Goiás, Brazil -- an isotype in the Geneva herbarium was photographed by Macbride as his type photograph number 24663.

Material of this taxon has been misidentified and distributed in herbaria under the name L. lupulina Cham. & Schlecht.

In all, 5 herbarium specimens and 5 mounted photographs, including type or phototype material of both names involved, have been examined by me.

Citations: BRAZIL: Brasilia: Cobra & Oliveira 256 (Z). Goiás: G. Gardner 4336 [Macbride photos 24663] (It--photo, Kr--photo, M, N, N--photo, W--photo, Z--photo). PARAGUAY: Hassler 4557 (N--cotype), 5098 (N--cotype).

LIPPIA MACEDOII Moldenke, Phytologia 6: 327--328. 1958.

Bibliography: Moldenke, Phytologia 6: 327--328. 1958; Moldenke, Biol. Abstr. 33: 1215. 1959; Moldenke, Résumé 93 & 462. 1959; Hocking, Excerpt. Bot. A.5: 44. 1962.

Subshrub; stems and branches slender, obtusely tetragonal and sulcate or sometimes more acutely angled, densely canescent-strigose, the hairs becoming brownish in age; nodes annulate; principal internodes 1.2--6.5 cm. long; leaves decussate-opposite, very short-petiolate or subsessile; petioles when present rather stoutish, to 2 mm. long, densely canescent-strigose; leaf-blades firm-textured or even subcoriaceous, grayish-green on both surfaces but lighter beneath, elliptic, 2.7--5 cm. long, 1--2 cm. wide, acute at the apex, regularly serrate with rather appressed teeth from the apex to well below the middle, rounded or acutish at the base, bullate and densely strigose with bulbous-based hairs above, the hairs antrorsely confluent on each elevated portion between the deeply sunken veins, also densely strigose beneath with canescent hairs; midrib and the 5 pairs of slender secondaries deeply impressed above and very sharply prominent beneath, the secondaries ascending and slightly arcuate; tertiaries very numerous, slender, rather straight and subparallel, issuing

at almost right angles to the secondaries, impressed above and very slightly prominulous beneath; inflorescence axillary, capitate or subspicate, solitary in each of the upper axils; peduncles slender, rather sharply tetragonal, densely white-strigose with antrorse hairs, 1.5--3.5 cm. long, ascending, stiff; heads ovoid, 6--15 mm. long, 9--11 mm. wide; bracts ovate, the lowest ones to 6 mm. long and 3 mm. wide, acuminate at the apex, rather densely canescent-strigose with antrorse hairs, the peripheral ones long, stiffer, and bulbous-based; corolla rose, about 6 mm. long, the tube densely short-pubescent on the outside, the limb about 2.5 mm. wide.

The type of this distinctive species was collected by Amaro Macedo (no. 4423) — in whose honor it was named — in a field at Jacubá, in the municipality of Niquelandia, Goiás, Brazil, on February 24, 1956, and is deposited in the United States National Herbarium at Washington. The species is known thus far only from the type collection. In all, 2 herbarium specimens, including the type, have been examined by me.

Citations: BRAZIL: Goiás: Macedo 4423 (W--2249264--type, Z--isotype).

LIPPIA MARRUBIIFOLIA Reichardt, Verh. Zool.-bot. Ges. Wien 33: 322--323. 1884.

Bibliography: Reichardt, Verh. Zool.-bot. Ges. Wien 33: 322--323. 1884; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Hayek in Fedde, Repert. Nov. Sp. 2: 87. 1906; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 95 (1942) and [ed. 2], 80 & 190. 1949; Moldenke, Résumé 93 & 462. 1959.

Small shrub, 5--6 dm. tall, pilose-hirsute throughout as well as glandular-pubescent, dew-branched above; branches terete, elongate, procumbent at the base, later assurgent, leafy toward the apex; principal internodes 3--6 cm. long; leaves decussate-opposite, very short-petiolate; leaf-blades rounded or subrotund, 2--4 cm. long, cordate at the base, obtuse at the apex, coarsely dentate-serrate along the margins, rugose-venose, more or less densely pilose-hirsute on both surfaces, the venation pinnate, impressed above, prominent beneath; inflorescence corymbose; peduncles rigid, erect-spreading, 3--6 cm. long, terete; heads 2--2.5 cm. wide; bractlets ovate-rounded, 8--12 mm. long, acuminate at the apex, ciliate along the margins, reticulate-venose, pubescent, petaloid, handsomely rose, 5--7-veined; calyx 2 mm. long, bilobed, densely villous and glandular; corolla pubescent outside, the tube slender, slightly incurved, 8--10 mm. long, subequaling the subtending bractlet, the limb rather large, 5 mm. wide, rose, puberulent, more obscurely veined, the throat yellowish, the upper lobes obovate, emarginate, the lateral lobes ovate, obtuse at the apex, the lowest lobe subquadrate; stamens inserted at the middle of the corolla-tube, didynamous; filaments short; style shortly exserted from the calyx; stigma obliquely capitate, emarginate-bilobed; ovary glabrous; fruit not known.

The type of this apparently rare species was collected by Adol-

phus Varnhagen in dry places at the village of Porto Seguro, in the neighborhood of Piricatu, Minas Gerais, Brazil. The author places the species in the Section Rhodocnemis and says "Die Lippia marrubiifolia ist mit L. hederæifolia Mart. et Schauer.....am nächsten verwandt, unterscheidet sich von derselben aber durch die am Grunde niederliegenden, dann aufsteigenden stielrunden, dicht behaarten und drüsigen Aeste, durch die viel grösseren, rundlichen Blätter mit herzförmigem Grunde und stark runzeliger Blattspreite, ferner durch die eiförmigen, zugespitzten Bracteen, endlich durch die nicht nur behaarten, sondern auch zugleich drüsigen Kelche so auffallend dass an eine Verwechselung nicht zu denken ist."

Hayek (1906) says that his L. reticulata differs from this in having its leaves not velutinous above, dentate instead of crenate along the margins, the heads smaller, and the bractlets hirsute.

Nothing is known to me of L. marrubiifolia except what is given in the literature. The type is probably deposited in the herbarium of the Naturhistorisches Museum in Vienna, since it was apparently seen by Hayek.

LIPPIA MARTIANA Schau. in A. DC., Prodr. 11: 578. 1847.

Synonymy: Lippia martiana Cham. ex Moldenke, Alph. List Invalid Names Suppl. 1: 14, in syn. 1947. Lippia myriantha Mart. ex Moldenke, Alph. List Invalid Names Suppl. 1: 14, in syn. 1947. Lippia pyramidalis Hiern ex Moldenke, Alph. List Invalid Names Suppl. 1: 15, in syn. 1947.

Bibliography: Schau. in A. DC., Prodr. 11: 578. 1847; Schau. in Mart., Fl. Bras. 9: 229. 1851; Hiern, Vidensk. Meddel. Kjöbenh. 1877-1878: 97. 1877; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Glaz., Bull. Soc. Bot. France 58, Mém. 3: 541. 1911; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 95. 1942; Moldenke, Alph. List Cit. 1: 90 & 106. 1946; Moldenke, Alph. List Invalid Names 14 & 15. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 71. 1948; Moldenke, Alph. List Cit. 2: 366, 413, & 486 (1948), 3: 710, 751, 845, & 916 (1949), and 4: 1105, 1106, 1124, 1203, 1204, & 1300. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80 & 190. 1949; Moldenke, Résumé 93, 314--316, & 462. 1959; Moldenke, Phytologia 12: 23, 47, & 170. 1965.

Shrub, 1--2 m. tall; stems fruticose, erect, paniculately branched above, obsoletely tetragonal, splendidly silky-hirsute throughout; leaves ternate, short-petiolate, spreading or reflexed; leaf-blades ovate or ovate-elliptic, the lowest 5 cm. long and about 2.5 cm. wide, the upper ones gradually smaller, the uppermost very small and subrotund, all short-acuminate at the apex, cordate at the base, crenate along the margins, penninerved, rugose, scabrous-tomentose and hirtous above, villous-tomentose and incanous beneath, the floral ones diminutive; floriferous branchlets spreading, "foliorum pari sterili stipati apice thyrsum, paniculam constituentes"; peduncles usually in 4's, about 4 mm. long, equaling the subtending leaves, the verticels congested at the apex of the branchlets; heads small, subglobose-tetraquetrous, to 3 mm.

long; bractlets herbaceous, ovate, imbricate, acute at the apex, sericeous-villous, pulverulent-glandulose beneath the indumentum, half as long as the corolla-tube, the basal ones connate; calyx ovate, bifid, 4-dentate, sericeous-strigose; corolla rubescent or white, pulverulent-glandulose on the outside, the tube 2 mm. long, straight, ventricose at the middle, the limb 2 mm. wide, the lobes reflexed, truncate at both ends.

This species was based by Schauer on a specimen collected by Peter Clausen (no. 140) in fields Caxoeira do Campo, Minas Gerais, Brazil, on May 2, 1839, and one collected by Anders Fredrik Regnell (no. I.333) also in the state of Minas Gerais, deposited in the Martius, DeCandolle, and Sonder herbaria. The first of these specimens is referred to by Schauer as Clausen 1028, but "1028" seems to be the Herb. Martius number as is indicated on the label of Macbride's type photograph number 7859 of a specimen in the Delessert Herbarium at Geneva. It is also referred to as Clausen s.n. and is also the type collection of L. myriantha.

The type of L. pyramidalis was collected by Johannes Eugenius Bulow Warming (no. 15) at Lagoa Santa, Minas Gerais, Brazil, on June 8, 1864, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. The Regnell I.333 collections cited below are obviously not cotypes of L. martiana since they were collected 10 and 20 years after the species was named.

The species is placed by Schauer (1847) in his Section Gonio-stachyum. It has been found growing only in fields and on campos, flowering from January to March and June. Although Schauer states that the flowers are rubescent, they are described as "white" on Mosén 4318 and E. Pereira 7388. The Mosén 1526 distributed as L. martiana is actually L. salviaefolia Cham., while Regnell III.942 is L. sidoides Cham., Dusen s.n. [Morungava, 1914-16] is L. obscura Briq., and Mosén 4318 & J. E. Pohl s.n. [Brasiliae] are L. pohliana Schau.

In all, 33 herbarium specimens, including type material of all the names involved, and 7 mounted photographs have been examined by me.

Citations: BRAZIL: Brasilia: E. Pereira 7388 [Herb. Brad. 26624] (N); E. Santos 1649 [Sacco 1882; Herb. Brad. 27094] (N). Minas Gerais: Campos Novas 124 (N, Sp--15691); P. Clausen 12 (P), 140 [Herb. Martius 1028; Macbride photos 7859] (Br--cotype, Br--cotype, F--photo of cotype, Kr--photo of cotype, M--cotype, N--photo of cotype, N--photo of cotype, Si--photo of cotype, W--photo of cotype, Z--photo of cotype), 612 (Cp, N, N, S), 614 (S), s.n. [1840] (Br); Mosén 4318 (N, S); Regnell I.333 [3/2/1857] (S), I.333 [11/5/1867] (N, S, S, S, W--209651), I.333c (S); Schwacke s.n. (Ja--32326); Warming 15 (S), s.n. [Lagoa Santa] (N); Widgren 1235 (Br), s.n. [Caldas, Feb. 17, 1846] (Br, S, W--1322937), s.n. [1845] (Lu, Lu), s.n. [Brasiliae] (S).

LIPPIA MATTOGROSSENSIS Moldenke, *Phytologia* 1: 468. 1940.

Bibliography: Moldenke, *Phytologia* 1: 468 (1940) and 1: 504. 1941; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 37 & 96. 1942; Moldenke, *Alph. List Cit.* 1: 289. 1946; E. J. Salisb., *Ind. Kew. Suppl.* 10: 134. 1947; Moldenke, *Alph. List Cit.* 2: 369, 552, 553, & 621. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 80 & 190. 1949; F. C. Hoehne, *Ind. Bibl. & Num. Pl. Col. Com. Rondon* 348. 1951; Moldenke in E. Y. Dawson, *Los Angeles Co. Mus. Contrib. Sci.* 7: 11 & 12, fig. 3L. 1957; Moldenke, *Résumé* 93 & 462. 1959; Moldenke, *Phytologia* 12: 170. 1965.

Illustrations: Moldenke in E. Y. Dawson, *Los Angeles Co. Mus. Contrib. Sci.* 7: 12, fig. 3L. 1957.

Herb; branchlets slender, obtusely tetragonal, brown, densely hirsute with long white hairs, rather twiggy, the hairs 1--1.3 mm. long; principal internodes 3--4.5 cm. long; leaves decussate-opposite; petioles slender, 4--10 mm. long, densely hirsute like the branchlets; leaf-blades thin-chartaceous, dark-green, lighter beneath, elliptic-ovate or ovate, 2--5.5 cm. long, 1.2--2.6 cm. wide, acute at the apex, serrate along the margins from the base to the apex with small blunt teeth (6--9 per cm. of margin), acute or rounded at the base, hirsute above with hairs precisely like those on the branchlets, twigs, and petioles, densely hirsute-tomentose beneath with somewhat shorter, tangled, whitish or cinereous hairs and also densely granular-pulverulent and resinous; midrib slender, flat or obscurely impressed or subimpressed above, prominent beneath; secondaries slender, 6--10 per side, usually irregular, arcuate-ascending, slightly subimpressed above, prominent beneath; vein and veinlet reticulation abundant, rather obscurely subprominent above, prominent and dark beneath; inflorescence axillary, capitate, numerous, 4--6 in each upper leaf-axil (rarely reduced to 1 per axil in the lowermost axils of the twigs); peduncles very slender, 5--16 mm. long, densely long-hirsute like the twigs; heads dense, 4--10 mm. long, 7--9 mm. wide.

The type of this species was collected by Frederico Carlos Hoehne (*Com. Rondon* 4541 & 4542) at Coxipó da Ponte, Cuiabá, Mato Grosso, Brazil, in March, 1911, and is deposited in the herbarium of the Instituto Botânico at São Paulo. In my original description of this species the type number was given as "470", but this number, according to Dr. Hoehne in a letter to me dated December 13, 1948, was only a reference number at the side of the label. He himself cites it as "No. 4541 - F. C. H., Coxipó da Ponte, Cuiabá, Mato Grosso, 3-1911 (Não 470, conforme por engano saiu no trabalho referido para a descrição original). No SP duplicata no. 4542 = 31975."

The plant has been found in cerrados and on the banks and margins of small streams running through hilly cerrado, flowering in March and May. In all, 6 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: BRAZIL: Goiás: E. Y. Dawson 14864 (Z). Mato Grosso: F. C. Hoehne *Com. Rondon* 4541 [470; 4542] (N--photo of type, N--isotype, N--isotype, Sp--31975--type, Z--photo of type); *Krug* 25

(N--photo, Sp--39443, Sp, Z--photo).

LIPPIA MCVAUGHII Moldenke, Résumé Suppl. 4: 4, nom. nud., June 5. 1962; Phytologia 8: 388, December 10. 1962.

Bibliography: Moldenke, Résumé Suppl. 4: 4. 1962; Moldenke, Phytologia 8: 388. 1962; Moldenke, Biol. Abstr. 42: 1517. 1963; Hocking, Excerpt. Bot. A.6: 455. 1963.

Tree, 10--12 m. tall; trunk 25 cm. in diameter at breast height; branchlets slender, gray-stramineous, glabrous, the younger parts obscurely tetragonal; leaves decussate-opposite, numerous toward the tips of the branchlets; petioles very slender, about 1 cm. long, glabrous; leaf-blades thin-chartaceous, shiny-green on both surfaces, elliptic or ovate, 2--6 cm. long, 1--3.5 cm. wide, acute or short-acuminate at the apex, sharply serrate with regular somewhat antrorsely appressed teeth from below the widest part to the apex, cuneate-acuminate at the base, glabrous on both surfaces; midrib very slender, flat above, prominent beneath; secondaries very slender, 5--8 per side, arcuate-ascending, not anastomosing, terminating in the sinuses between the teeth, flat above, prominulous beneath; veinlet reticulation rather sparse and not prominent; inflorescence axillary, near and at the apex of the branchlets, one per axil, opposite and decussate; peduncles filiform, 1.5--4 cm. long, glabrous; heads densely many-flowered, 1.4--2.5 cm. wide; bracts large, ovate, papery, greenish-white, 12--15 mm. long, 6--8 mm. wide at the base, acute at the apex, sessile, densely short-pubescent on both surfaces; corolla white, yellow in the center.

The type of this species was collected by Rogers McVaugh -- in whose honor it was named -- and Walter Norman Koelz (no. 1660) on low mountain summits 7 miles north of Santiago, on the road to Durazno, in deciduous woodlands, growing with Cordia, Brosimum, and Platymiscium, at an elevation of 200 meters, Colima, Mexico, on December 10, 1959, and is deposited in the herbarium of the University of Michigan at Ann Arbor. The collectors note that the plant was abundant at the type locality. It is known thus far only from the original collection. In all, 2 herbarium specimens, including the type, have been examined by me.

Citations: MEXICO: Colima: McVaugh & Koelz 1660 (Mi--type, Z--isotype).

LIPPIA MEGAPOTAMICA Spreng., Syst. Veg., cur. Post, 4 (2): 231 & 351. 1827.

Bibliography: Spreng., Syst. Veg., cur. Post, 4 (2): 231 & 351. 1827; Steud., Nom. Bot., ed. 2, 2: 54. 1840; Schau. in A. DC., Prodr. 11: 593. 1847; Schau. in Mart., Fl. Bras. 9: 252. 1851; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 94 (1942) and [ed. 2], 80 & 190. 1949; Moldenke, Résumé 93 & 462. 1959.

Nothing is known to me about this species except what is stated in the original description, namely, that it is a perennial plant, with terminal hemispheric heads, broadly ovate en-

tire bracts, leaves that are ovate, serrate, pilosulous on the veins beneath, and an erect herbaceous stem. The type was collected by Friedrich Sellow in Rio Grande do Sul, Brazil, and was deposited in the herbarium of the Botanisches Museum at Berlin, but is now destroyed.

LIPPIA MELASTOMIFOLIA Gandoger, Bull. Soc. Bot. France 65: 63--64. 1918.

Bibliography: Gandoger, Bull. Soc. Bot. France 65: 63--64. 1918; A. W. Hill, Ind. Kew. Suppl. 6: 117. 1926; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 20 & 96 (1942) and [ed. 2], 35 & 190. 1949; Moldenke, Résumé 42 & 462. 1959.

Branches glabrous, broadly quadrangular, sulcate; leaf-blades oblong-lanceolate, 5--6 cm. wide, more contracted at the base than in *L. myriocephala* Schlecht. & Cham., entire along the margins, glabrous above, lightly hirtellous beneath; inflorescence glabrous; peduncles angulate, glabrous, shorter than in *L. myriocephala*; floral bractlets cuspidate-lanceolate.

The type of this puzzling species was collected by Hans von Türckheim in Alta Verapaz, Guatemala. Gandoger compares it with *L. myriocephala*, saying "A planta typica mexicana (Ehrenberg n. 1202!) *L. myriocephalae* Cham. Schlecht. valde differt", followed by the characters given above. He also says "An hujus sectionis ob ramos valde angulosos? specimina mexicana tomentella sunt foliis minoribus villosis obsolete crenulatis, verticillastris multifloris longe pedunculatis."

Nothing whatever is known to me about this plant except what is stated in the original description. The description does not seem to apply to any other species of the genus known to me thus far from Alta Verapaz.

LIPPIA MICROCEPHALA Cham., Linnaea 7: 220--221. 1832.

Synonymy: *Lippia hermannioides* Cham., Linnaea 7: 219--220. 1832. *Lippia triplinervis* Gardn. in Hook., Lond. Journ. Bot. 4: 133--134. 1845. *Lippia viscosa* Casar. ex Moldenke, Suppl. List Invalid Names 6, in syn. 1941. *Lippia hermannioides* Cham. & Schlecht. ex Moldenke, Alph. List Invalid Names Suppl. 1: 14, in syn. 1947.

Bibliography: Cham., Linnaea 7: 219--221. 1832; Steud., Nom. Bot., ed. 2, 2: 54. 1840; D. Dietr., Syn. Pl. 3: 597. 1843; G. Gardn. in Hook., Lond. Journ. Bot. 4: 133--134. 1845; Walp., Repert. Bot. Syst. 4: 45 & 46. 1845; Schau. in A. DC., Prodr. 11: 587--588. 1847; Schau. in Mart., Fl. Bras. 9: 240--241 & 307, pl. 38, fig. 2. 1851; Bocq., Adansonia 3: 244. 1863; Hiern, Vidensk. Meddel. Kjøbenh. 1877--1878: 99. 1877; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95 & 96. 1894; Glaz., Bull. Soc. Bot. France 58, Mém. 3: 541--542. 1911; Stapf, Ind. Lond. 4: 125. 1930; Moldenke, Suppl. List Invalid Names 6. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37, 95, & 96. 1942; Moldenke, Alph. List Invalid Names 32. 1942; Moldenke, Am. Journ. Bot. 32: 611. 1945;

Moldenke, Alph. List Cit. 1: 94, 107, & 238. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 14. 1947; Moldenke, Phytologia 2: 336. 1947; Moldenke, Alph. List Cit. 2: 484 (1948), 3: 689, 693, 710, 711, 725, 730, 916, & 920--923 (1949), and 4: 1072, 1132, 1134, 1203, 1204, 1261, & 1300. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 10. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80 & 190. 1949; Moldenke, Résumé 93, 313, 318, & 462. 1959; Rennó, Levant. Herb. Inst. Agron. Minas 150. 1960; Moldenke, Résumé Suppl. 8: 5. 1964; Moldenke, Phytologia 12: 24 & 222. 1965.

Illustrations: Schau. in Mart., Fl. Bras. 9: pl. 38, fig. 2. 1851.

Many-stemmed subshrub or shrub, 1--2 m. tall, erect, much-branched, scabrid-hirtous or glandulose-subhirsute, glandular-punctate beneath the indumentum, often stout and with the appearance of Hermannia disticha Schrad. or H. micrantha Schrad. and viscid with short and dense glandular indumentum throughout; branches tetragonal or subtetragonal, spreading, twiggy; branchlets dense, strict, fuscous; leaves approximate, distinctly short- or very short-petiolate, glandulose, aromatic with an odor almost like that of Hyssopus; leaf-blades green above, elliptic or obovate to cuneate-obovate or subrotund, about 1.2 cm. long, 0.6--1 cm. wide, larger on sterile shoots, truncate or retuse at the apex, acutely dentate or crenate toward the apex with 3 or 4 teeth on each side (the apical one broad and acute or truncate), revolute along the margins, entire and cuneate at the base and attenuate into the petiole, impressed-penninerved and rugose above, scabrous and shiny above, softly canescent-hirtellous and densely glandular-pulverulent or glandular-punctate beneath or strigose-hirtellous only on the reticulation, at first incanous, often finally ferruginous, usually hirtellous on the venation, sometimes also on the lamina; inflorescence pedunculate, loosely nodding or lax, spicate, equaling or shortly surpassing the subtending leaves; peduncles long or short, erect during anthesis, nodding after anthesis; heads subspicate, few- (3--5) flowered, oblong, lax, almost hidden by the foliage; bractlets membranous, lanceolate or elliptic, about 6 mm. long, acute or subobtuse at the apex, 5-veined, reticulate, patulous, hirsutulous, inflexed, loosely imbricate, subequaling the corolla-tube, ciliate, the outer ones involucrate; flowers aromatic, very shortly pedicellate; calyx campanulate, membranous, 2--3 mm. long, often very short, 4-veined, loosely investing the base of the corolla-tube or almost half as long as the corolla-tube, subvillous or subhirtellous, bidentate or irregularly 4-dentate, the teeth broad, acute, ciliate; corolla hypocrateriform, white to lilac, lilac-pink, violet, rose, or clear-rose, yellow in the throat, villosulous on the outside or pubescent only above, its tube rather straight, ampliate at the middle, the limb rather large, slightly surpassing the bractlets, white or yellowish to pinkish, the lobes rounded, the middle lobe of the lower lip erect, concave, truncate, undulate or crisped on the margins; mature fruit

included by the fruiting-calyx, the carpels coherent, one often aborted.

The type of this species was collected by Friedrich Sellow at the summit of the mountain called Morro de Villa Rica, at 4500 feet altitude, in Minas Gerais, Brazil, and was deposited in the herbarium of the Botanisches Museum at Berlin, where it was photographed by Macbride as his type photograph number 17525, but is now destroyed. The type of L. hermannioides was collected by Sellow at Serra de Cocheira in the same state, deposited in the same herbarium, photographed by Macbride as his type photograph number 17513, and also now destroyed. The type of L. viscosa was collected by Giovanni Casaretto (no. 2922) at Serra da Caraca, also in Minas Gerais, and deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques in Geneva, where it was photographed by Macbride as his type photograph number 24678. The type of L. triplinervis was collected by George Gardner on the summit of the Organ Mountains, Rio de Janeiro, Brazil.

Schauer (1851) says of L. microcephala: "L. Hermannoidi valde similis sed habitu strictiori, foliis minoribus acute dentatis indumento parciore et rigidiori vestitis; capitulis minoribus magisque compactis, bractearum figura, corollae minore et potissimum calyce grandi diversa." Hiern (1877) maintains L. triplinervis and L. hermannioides as valid species and reduces L. microcephala to synonymy under the latter. Walpers (1845), Steudel (1840), and Schauer (1847) keep L. microcephala and L. hermannioides as separate species. Meisner notes on Martius 1038 "L. hermannioides Cham. & Schl. ex Mart., non Schau." Schauer (1847) says that the species is related to L. iodophylla Schau. and classifies it in his Section Zapania, Subsection Axilliflorae.

In regard to flower color it is of interest to note that the corolla is described as "lilac" on Brade 13906; "white & lilac" on Pereira 7524; "lilac-pink fading to white" on Mexia 5710; "violet" on Mendes Magalhães 4332; "clear-rose" on Mendes Magalhães 4333; "rose" on Badini s.n.; and "white" on Glaziou 15330, Macedo 2061, L. O. Williams 5076, and Williams & Assis 6711.

The species has been found on campos and high campos, in calcareous sandy soil of campos, and in brushy pastures, at altitudes of 1270--2100 meters, flowering from February to April and in June. Mexia says of it "common locally", while Schauer says "Crescit copiose in montosis apricis virgultosis prov. Minarum generalium", "in montibus ferruginosis", and "in campis siccis". The vernacular name, "alecrin", has been recorded for it. Material has been misidentified and distributed in herbaria under the names L. grandiflora Mart. & Schau., L. pseudo-thea Schau., and Hyptis sp. On the other hand, the Lufgren s.n. [Herb. Inst. Bot. S. Paulo 15660], distributed as L. microcephala, is actually a species of Hyptis in the Lamiaceae.

Schauer (1851) cites, in addition, under L. microcephala a Lund

s.n., Riedel s.n., and Schüch s.n. [Morro de Villa Rica] from Minas Gerais and Vauthier 194 from Rio de Janeiro, and for L. hermannioides a Martius s.n. [in alpinis ad Villa Rica], Riedel s.n. [in saxosis montis in Serro do Caraca], and Sellow s.n. [Serra de Cacheira]. Glaziou (1911) cites his nos. 19706 & 19707 from Minas Gerais -- possibly the "19709" cited below is an error in transcription for 19707.

In all, 51 herbarium specimens and 15 mounted photographs, including type or phototype material of all the names involved, have been examined by me.

Citations: BRAZIL: Goiás: Glaziou 21898 (Br, Cm, S). Minas Gerais: Badini s.n. [Morro do Cruzeiro, 21-VI-942] (Be--13651); Barreto & Brade 14469 [Herb. Rio de Jan. 29523] (B); Brade 13459 [Herb. Rio de Jan. 29534] (B), 13906 [Herb. Rio de Jan. 29533] (B); Casaretto 2922 [Macbride photos 24678] (Kr--photo, N--photo, W--photo); P. Clausen 6 (P), 127 (Br, Br, Br), 381 (Br, N), 381b (Br), 1058 (Br), s.n. [Aug.-April 1840] (Br), s.n. [1840] (S), s.n. [Brésil] (N, W--1706076, W--2343283); Eschwege s.n. [Villa Rica, 1824] (Br); Glaziou 15330 (W--1112497), 19709 (Br); Herb. Rio de Janeiro prov. no. I (Ja); Macedo 2061 (N, S); Martius 1038 (M), s.n. [Minas, 1821] (Br); Mello Barreto 3214 [Herb. Jard. Bot. Belo Horiz. 11163] (N), 5059 (N); Mendes Magalhães 4332 [Herb. Jard. Bot. Belo Horiz. 45160] (N), 4333 [Herb. Jard. Bot. Belo Horiz. 45162] (N); Mexia 5710 (Gg--286575, Go, N, N, S); E. Pereira 7524 [Herb. Brad. 26623] (N); J. E. Pohl s.n. [Brasil, 1819] (Br, N--photo); A. Saint-Hilaire s.n. [Serra da Caraca] (N, N); Schwacke s.n. (Ja--14890); Segadas-Vianna 6011 (Ja); Sellow 889 (Vt), 1279 (Vt), s.n. [Brasília; "L. hermannioides"; Macbride photos 17513] (F--photo, Kr--photo, N--photo, N--photo, Si--photo, W--photo, Z--photo), s.n. [Brasília; "L. microcephala"; Macbride photos 17525] (Kr--photo of type, N--photo of type, N--photo of type, Vt--isotype, W--photo of type); L. O. Williams 5076 (G, N); Williams & Assis 6711 (G, N), 6717 (G). MOUNTED ILLUSTRATIONS: Mart. Fl. Bras. 9: pl. 38 (Br).

LIPPIA MICROMERA Schau. in A. DC., Prodr. 11: 587. 1847.

Synonymy: Lippia organifolia Kunth ex Cham., Linnaea 7: 226, nom. nud. 1832. Gardoquia organoides Reichenb. ex Cham., Linnaea 7: 226, in syn. 1832. Lippia micromer Schau. ex Moldenke, Suppl. List Invalid Names 6, in syn. 1941. Lippia micromeria Schau. ex Moldenke, Résumé 314, in syn. 1959.

Bibliography: Cham., Linnaea 7: 226. 1832; Schau. in A. DC., Prodr. 11: 587. 1847; Griseb., Fl. Brit. W. Ind. 495. 1861; Griseb., Cat. Pl. Cub. 215. 1866; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 151. 1895; Urb., Symb. Ant. 4: 532 (1911) and 8: 594. 1921; Britton & P.

Wils., *Scient. Surv. Porto Rico* 6: 142. 1925; Moldenke, *Alph. List Common Names* 28. 1930; Moldenke, *Revist. Sudam. Bot.* 5: 2. 1939; Moldenke, *Lilloa* 4: 293—294. 1939; Moldenke, *Suppl. List Invalid Names* 6. 1941; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 29, 30, 32, 33, 73, & 96. 1942; Moldenke, *Alph. List Invalid Names* 31. 1942; Moldenke, *Phytologia* 2: 81 & 107. 1945; Moldenke, *Alph. List Cit.* 1: 12, 22, 30, 67, 156, & 179. 1946; Moldenke, *Bol. Soc. Venez. Cienc. Nat.* 11: 45. 1947; Moldenke, *Phytologia* 2: 347. 1947; Neal, *In Gard. Hawaii* 637 & 638, fig. 244b. 1948; Moldenke, *Alph. List Cit.* 2: 352, 543, & 610 (1948), 3: 749, 764, 820, 935, & 974 (1949), and 4: 984, 1008, 1077, 1096, 1172, & 1219. 1949; H. N. & A. L. Moldenke, *Anal. Inst. Biol. Mex.* 20: 10. 1949; Moldenke, *Phytologia* 3: 74 & 133. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 56, 57, 60, 63, 66, 162, & 190. 1949; Moldenke, *Revist. Sudam. Bot.* 8: 173. 1950; Calpouzos, *Econom. Bot.* 8: 228. 1954; Moldenke, *Fl. Trin. & Tob.* 2 (6): 390—391. 1955; Moldenke, *Fam. 2 Verbenac.* 9—10. 1955; Moldenke, *Résumé* 62, 63, 67, & 462. 1959; Moldenke, *Résumé Suppl.* 6: 5 (1963) and 10: 2. 1964; Moldenke, *Phytologia* 12: 24, 47, 162, 164, & 190. 1965.

Illustrations: Neal, *In Gard. Hawaii* fig. 244b. 1948.

Small bush or small leafy shrub, to 2.5 m. tall, usually much lower, much-branched, often gregarious, the whole plant with a strong odor of mint or thyme, glandular-punctate throughout beneath the pubescence; branches tetragonal, villosulous; twigs axillary, very leafy; leaves decussate-opposite, those on the twigs crowded so as to appear fasciculate, aromatic-fragrant; petioles very short; leaf-blades small, 6--12 mm. long, 3--6 mm. wide, obovate-elliptic, subacute at the apex, narrowed into the petiole at the base, usually entire or sparsely crenate with only a few obscure teeth near the apex, sometimes distinctly toothed, revolute along the margins, strigose-pubescent above, villous or hirtellous-pubescent and subcanescent beneath, the midrib and secondaries mostly impressed above; inflorescence capitate, hemispheric, solitary in the upper axils of the twigs, very shortly pedunculate, equaling or shorter than the subtending leaves; bractlets loosely imbricate, membranous, elliptic, 3--5-veined, pellucid, obtuse at the apex, pubescent, ciliate along the margins, shorter than the corolla-tube, the exterior ones slightly larger than the inner ones; flowers fragrant; calyx about 2 mm. long, bifid, long-villous; corolla hypocrateriform, white, yellowish in the throat, its tube subglabrous, punctate, about twice as long as the calyx.

This species was based by Schauer on a collection made by Johan Wilhelm Karl Moritz (no. 492) along the Río San Rafael near Angostura, Angostura, Venezuela, deposited in the herbarium of the Botanisches Museum at Berlin, where it was photographed by Macbride as his type photograph number 17526, now destroyed; on *Sieber Fl. Trinit.* 86, presumably from Trinidad; on a collection by José Antonio de la Ossa from Cuba; and on one by Carlo Giuseppe Bertero from Puerto Rico, deposited in the Berlin and DeCandolle

herbaria. The Cuban and Puerto Rican collections probably represent var. helleri (Britton) Moldenke. The Moritz collection is hereby designated as logotype of L. micromera in its typical form.

Schauer (1847) placed the species in his Section Zapania, Subsection Axilliflorae.

The type of Gardoquia organoides is Sieber Fl. Trinit. 86, presumably (but not definitely) collected on the island of Trinidad, and deposited in the Reichenbach Herbarium at the Naturhistorisches Museum in Vienna.

This typical form of L. micromera is known only in the wild state from northern South America, perhaps including the islands of Trinidad and Margarita, but there are named varieties in the Greater Antilles and in Brazil. Dr. Cheesman says in a letter to me regarding the occurrence of L. micromera in Trinidad: "I doubt if this is native. Trin. Herb. 4586 is Baptiste, Maraval, and in my experience that combination of collector and locality occurs on a number of plants that are not native. The Botanic Gardens are on the Maraval side of Port of Spain, and I believe the locality indicated is either the R. B. G. or a private garden. The Sieber record by itself is of course worth very little." W. E. Broadway 1989 has a label reading "Tobago" in the Britton Herbarium, but N. Y. Sandwith in a note to N. W. Simmonds in March, 1956, says it was collected in the Santa Cruz Mountains, Trinidad, on 5.12.1907. There is, however, no indication that it was taken from a cultivated plant. This Broadway collection is the basis of my recording the species from Tobago in several of my previous publications. It should also be noted here that Vogl 1348 may be from Federal District or Aragua in Venezuela — its label is inscribed merely "Caracas-Maracay".

Lippia micromera has been found on open hillsides, in formerly cultivated ground, dry scrubby woods, yards, xerophytic woods, and xerophytic habitats in general, from 100 to 1980 meters altitude, flowering and fruiting from January to May and July to September. Pittier found it "on arid slopes, gregarious in places" in Lará. Common names recorded for it are "false thyme", "oregano", "oregano del pais" [also applied to var. helleri and to L. organoides H.B.K.], "oregano poleo", "orégano", "origanum", "small thyme", and "Spanish-thyme". Calpouzos (1954) states that this is one of the many plants called "oregano", "oregeno", "origano", or "oragano", along with L. affinis Schau., L. formosa T. S. Brandeg., L. fragrans Turcz., L. graveolens H.B.K., L. micromera var. helleri (Britton) Moldenke, L. organoides H.B.K., L. palmeri S. Wats., L. palmeri var. spicata Rose, Lantana involucrata L., L. achyranthifolia Desf., L. trifolia L., Coleus amboinicus Lour., Hedeoma floribunda Standl., H. patens Jones, Hyptis albida H.B.K., H. americana (Aubl.) Urb., H. capitata Jacq., H. suaveolens (L.) Poit., Limnophila stolonifera (Blanco) Merr., Monarda austromontana Epl., Ocimum basilicum L., Origanum vulgare L., O. majorana L., Polio-

mintha longiflora Gray, and Salvia sp. It is used for seasoning meat and to flavor meatloaf, stuffing, and gravy. In Venezuela it is said to be used as a condiment and for medicinal purposes. In Hawaii the leaves are used to flavor soup, meatloaf, etc. In Brazil it is used to season food. In Trinidad it is cultivated as a potherb and sometimes escapes from cultivation. It may be distinguished from the similarly employed L. alba (Mill.) N. E. Br. by its very small leaves which have entire and distinctly revolute margins (or obscurely few-dentate at the apex) and are densely resinous-punctate beneath and by the narrowly lanceolate obtuse bractlets. It should be noted that Killip 37142 has the leaves distinctly toothed.

Material of L. micromera has been misidentified and distributed in herbaria as Hyptis sp. On the other hand, the Ekman H.3619 & H. 12451, J. de J. Jiménez 4329, Leonard & Leonard 12113, and Valeur 147, distributed as L. micromera, are actually var. helleri.

In all, 60 herbarium specimens and 7 mounted photographs, including type or phototype material of all the names involved, have been examined by me.

Citations: TRINIDAD: Baptiste s.n. [Maraval] (R--4586); W. E. Broadway 1989 (N); Sieber Fl. Trinit. 86 [Herb. Reichenbach f. 77616, 189448, & 203047] (Cb--cotype, Cb--cotype, N--photo of cotype, V--cotype, V--cotype, V--cotype, Z--photo of cotype). MARGARITA ISLAND: Gines 2790 (W--2174241), 3077 (W--2174393), 3387 (W--2174570), 3711 (W--2174768). COLOMBIA: Norte de Santander: Araque Molina, Otálora, & Barkley 18NSol43, in part (N); Garganta 1126 (F--1294516). VENEZUELA: Angostura: Moritz 492 [Macbride photos 17526] (It--photo of logotype, Kr--photo of logotype, N--photo of logotype, N--photo of logotype, W--photo of logotype). Aragua: Vogl 1348 (N). Federal District: Bailey & Bailey 975 (Ba); Killip 37142 (Ca--37142, N, W--1855325); Vogl 127 (Ve). Lara: H. Pittier 13108 (N, Ve--12779, W--1440410); Saer 484 (Ve--12782); Steyermark 55199 (F--1205141, N); Tamayo 1101 (Ve, W--1800662), 3351 (Ve). Miranda: Barrus s.n. [January 11, 1940] (It). Monagas: Tamayo 3486 (Ve, Ve). Táchira: Tamayo 3700 (Ve--31045); Vareschi 3999 (Ve--42843). State undetermined: Karsten s.n. [Llanos del Orinoco] (V). BRITISH GUIANA: J. S. de la Cruz 953 (N, W--1069847), 1923 (Ba, Cm, N, W--1190367), 3695 (N, W--1282908), 4360 (Ca--299144, Cm, N, W--1232025). CULTIVATED: British Guiana: Archer 2292 (U, W--1663149). Guadeloupe: Duss 2551 (N). Hawaiian Islands: Neal 1235 (Bi, Ca--964556), s.n. [Nov. 17, 1940] (Bi), s.n. [6/24/41] (Bi), s.n. [Sept. 26, 1946] (N); R. Greenfield s.n. [June 19, 1959] (Bi). Trinidad: E. E. Cheesman 177 (N, R--13349). Venezuela: Bailey & Bailey 1326 (Ba, W--1617746); Lasser 769 (Ve--12780).

LIPPIA MICROMERA var. HELLERI (Britton) Moldenke, Revist. Sudam.

Bot. 5: 2. 1937.

Synonymy: Lippia cuneifolia Sessé & Moc., Fl. Mex., ed. 2, 139. 1894 [not L. cuneifolia Steud., 1853, nor Torr., 1937, nor Torr. & Steud., 1962, nor (Torr.) Greene, 1959, nor (Torr.) Steud., 1841, nor Zipp., 1841]. Lippia helleri Britton, Torreya 3: 105. 1903.

Bibliography: Sessé & Moc., Fl. Mex., ed. 2, 139. 1894; N. L. Britton, Torreya 3: 105. 1903; Prain, Ind. Kew. Suppl. 3: 104. 1908; Britton & P. Wils., Scient. Surv. Porto Rico 6: 141-142. 1925; A. W. Hill, Ind. Kew. Suppl. 7: 139. 1929; Moldenke, Revist. Sudam. Bot. 5: 2. 1937; Moldenke, Alph. List Common names 23. 1939; Moldenke, Suppl. List Common Names 14 & 16. 1940; Moldenke, Prelim. Alph. List Invalid Names 30 & 31. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 25-27, 73, & 96. 1942; Moldenke, Alph. List Invalid Names 30 & 31. 1942; Moldenke, Phytologia 2: 107. 1945; Moldenke, Alph. List Cit. 1: 3, 15, 62, 154, 188, 189, 270, & 282. 1946; H. N. & A. L. Moldenke, Pl. Life 2: 63. 1948; Moldenke, Alph. List Cit. 2: 570, 647, & 650 (1948), 3: 653, 654, 689, 782, 867, 925, 938, & 971 (1949), and 4: 1082, 1238, 1247, 1254, 1257, 1259, & 1294. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 44, 48, 49, 162, & 190. 1949; Moldenke, Phytologia 4: 124. 1952; Calpouzos, Econom. Bot. 8: 228. 1954; Alain in León & Alain, Fl. Cuba 4: 288 & 289. 1957; Moldenke, Résumé 52, 57, 58, 220, 312, 313, & 462. 1959; Moldenke, Résumé Suppl. 3: 11. 1962; Moldenke, Phytologia 12: 47, 162, 164, & 190. 1965.

The type of this poorly defined variety was collected by Amos Arthur Heller -- in whose honor it was named -- and Emily Gertrude Heller (no. 1238) in thickets near Bayamon, Puerto Rico, on April 29, 1899, and is deposited in the Britton Herbarium at the New York Botanical Garden. The type of L. cuneifolia was collected by Martín Sessé y Lacasta, José Mariano Mocino, Juan Diego del Castillo, and José Maldonado (no. 2214) also in Puerto Rico and is deposited in the herbarium of the Jardín Botánico in Madrid. The L. cuneifolia of Steudel, of Torrey, Torrey & Steudel, (Torrey) Greene, and (Torrey) Steudel are all Phyla cuneifolia (Torr.) Greene, while that of Zippelius is P. nodiflora (L.) Greene.

Britton (1903) says "Near L. micromera Schauer, and suspected by Professor Urban to be a cultivated form of that species, but the collector's field notes do not indicate this as probable, and the characters of leaves and of corolla are very different." He gives these characters as follows: "Leaves obovate, 1 cm. long or less, opposite, dull green, puberulent and resinous on both sides, obtuse, crenate, cuneate or narrowed at the base, the slender petiole about 1/4 as long as the blade.....corolla-tube slightly enlarged upward, the limb 2-lipped, the lower lip with a broad middle lobe and 2 smaller lateral ones, the upper lip 2-lobed, all the lobes obtuse; corolla white, tinged with pale purple."

Lippia micromera var. helleri has been found in arid thickets on coastal mountains, in pastures, on arid slopes, limestone terraces,

calcareous hills, and elevated coral reefs, at altitudes from sea-level to 600 meters, flowering from December to May and in September and October, fruiting in April, May, and October. Molina found it "common in matorrales" in Nicaragua. The Leonards found it "in low valley on plateau of cliff-bordered coast" in Haiti. In the Dominican Republic it is described by Jiménez as "very common wild and cultivated as a condiment" and by Allard as "a flavoring sage-like in taste for eatables", while Ekman says "plant not exactly agreeably aromatic, very abundant, a pretty plant". For his H.12451 he notes "cultivated and escaped".

Asenjo 1146 was actually purchased on the drug market in Puerto Rico. León, Clément, & Roca say of it in Oriente, Cuba: "introduced?"

Collectors describe this plant as a bush or shrub, 1--2 m. tall, the whole plant aromatic, the corollas white. Common names recorded for it are "mejorana", "oregano", "oregano del país" [applied also to L. micromera Schau. and L. origanoides H.B.K.], and "orégano". Calpouzos (1954) notes that this is one of the many plants called "oregano", "oregeno", "origano", or "oragano", along with the 25 others listed above under the typical form of the species.

Material has been misidentified and distributed in herbaria as L. micromera Schau. and Ocimum basilicum L. On the other hand, the Alain & López F.6982, distributed as L. micromera var. helleri, is actually Lantana parvifolia Desf.

In all, 58 herbarium specimens and 2 mounted photographs, including type material of all the names involved, have been examined by me.

Citations: NICARAGUA: Zelaya: Molina R. 1996 (Ca--10829, G). CUBA: Oriente: Acuña 9870 (Es); Ekman 2887 (S), 8689 (N, S); Hioram 6733 (Z); León 10320 (Ha, N), 11788 (Ha, N); León, Clément, & Roca 10330 (Ha, N). HISPANIOLA: Dominican Republic: B. Augusto 891 (N), 989 (N); Ekman H.12451 (Ca--608098, Mi, N), H.12461 (S); Fuertes 855 (S); Howard & Howard 9573 (N); J. de J. Jiménez 4329 (W--2351608); Lavastre 1857 (N). Haiti: Ekman H.3619 (Ca--608094, Mi, S), H.3947 (N, S); Leonard & Leonard 11068 (Mi), 11929 (Ba), 12113 (Ca--439877, Cm), 12580 (N). PUERTO RICO: Asenjo 1146 (As); Britton & Britton 9532 (N); Britton & Cowell 890 (N); Eggers 1275 (Cp); Heller & Heller 1238 (N--type); Herb. Ames s.n. [July 1915] (Oa--9973); Otero & Lopez s.n. [Otero 473] (Bt--49937, Du--292517, Kr, N); Sessé, Mociño, Castillo, & Maldonado 2214 (N--photo, Q, Z--photo); Sintenis 3671 (S); Stevens & Hess 3413 (N). CULTIVATED: Cuba: Acuña 17435 (Es). Dominican Republic: H. A. Allard 11432 (S); Valeur 1147 (Ca--445662, Cp, Du--202974, Gg--182923, Gg--182982, Mi, N, S). Puerto Rico: Britton & Britton 9293 (N); J. A. Stevenson 3933 (N).

LIPPIA MICROMERA var. PALUDICOLA Moldenke, Phytologia 1: 468--469.

1940.

Bibliography: Moldenke, Phytologia 1: 468—469 (1940) and 1: 504. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 96. 1942; Moldenke, Alph. List Cit. 1: 44. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80 & 190. 1949; Moldenke, Résumé 94 & 462. 1959.

This variety differs from the typical form of the species in having its branchlets and twigs merely densely pulverulent-punctate, instead of spreading short-pubescent, and in having its petioles and the very narrow and entire leaf-blades also merely pulverulent-punctate on both surfaces, instead of short-pubescent or puberulent.

The type of this variety was collected by Jacques Samuel Blanchet (no. 2872) in swamps at Ilhabina, Jacobina, Bahia, Brazil, in 1839, and is deposited in the Meisner Herbarium at the New York Botanical Garden. Thus far the variety is known to me only from the type collection. In all, 5 herbarium specimens, including the type, have been examined by me.

Citations: BRAZIL: Bahia: Blanchet 2872 (Br--isotype, Br--isotype, Br--isotype, Lu--isotype, M--type).

LIPPIA MICROPHYLLA Cham., Linnaea 7: 226. 1832 [not L. microphylla Benth., 1894, nor F. Phil., 1865, nor R. A. Phil., 1951].

Synonymy: Lippia microphylla var. foliis acutiusculis Hiern, Vidensk. Meddel. Kjöbenh. 1877-1878: 97. 1877. Lippia microphylla var. fasciculata Hiern, Vidensk. Meddel. Kjöbenh. 1877-1878: 97. 1877. Lantana microphylla Cham. ex Moldenke, Alph. List Invalid Names Suppl. 1: 12, in syn. 1947 [not L. microphylla Franchet, 1882, nor Mart., 1894]. Lippia microphylla Mart. ex Moldenke, Alph. List Invalid Names Suppl. 1: 14, in syn. 1947. Lippia microphylla Cham. & Schlecht., in herb.

Bibliography: Cham., Linnaea 7: 226. 1832; Steud., Nom. Bot., ed. 2, 2: 54. 1840; D. Dietr., Syn. Pl. 3: 598. 1843; Walp., Repert. Bot. Syst. 4: 51. 1845; Schau. in A. DC., Prodr. 11: 577. 1847; Schau. in Mart., Fl. Bras. 9: 228. 1851; Bocq., Adansonia 3: 244. 1863; Hiern, Vidensk. Meddel. Kjöbenh. 1877-1878: 97. 1877; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Glaz., Bull. Soc. Bot. France 58, Mém. 3: 540. 1911; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 96. 1942; Moldenke, Alph. List Cit. 1: 43 & 121. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 12 & 14. 1947; Moldenke, Alph. List Cit. 2: 485, 486, & 553 (1948), 3: 689, 815, 916, & 923 (1949), and 4: 1176, 1204, 1235, 1293, & 1300. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80 & 190. 1949; F. C. Hoehne, Ind. Bibl. & Num. Pl. Col. Com. Rondon 349. 1951; Moldenke, Phytologia 4: 70. 1952; Moldenke, Résumé 75, 94, 306, 314, & 462. 1959; Rennö, Levant. Herb. Inst. Agron. Minas 150. 1960; Moldenke, Phytologia 7: 329. 1961; Moldenke, Résumé Suppl. 10: 6. 1964; Moldenke, Phytologia 12: 118, 169, 170, & 224. 1965.

Bushy much-branched shrub, 0.5--2 m. tall, with a strong odor; branches obsoletely tetragonal, the bark peeling off in a layer of fibrous strips; branchlets subterete, canescent-pubescent, the

youngest villous, the terminal ones often virgate; leaves small, decussate-opposite, petiolate, decreasing in size toward the apex of the branchlets; leaf-blades ovate or elliptic to suborbicular, dark-green above, 6--18 mm. long, 4--14 mm. wide, obtuse at the apex, rather long-attenuate into the petiole at the base, crenate along the margins, penninerved, rugose, densely strigose-holosericeous above or finally scabrous, more softly incanous-tomentose beneath; inflorescence axillary; peduncles aggregate, lax, 4--6 mm. long, villous; heads tetraquetrous, subglobose or ovoid, 6--8 mm. long, shorter than the lower subtending leaves, surpassing the upper ones; bractlets green, lanceolate, with a subulate inflexed acumination at the apex, patulous, loosely imbricate, equalling the corolla-tube, incanous-villous; calyx ovate, 1 mm. long, bifid, pubescent, ciliate, the lobes bidentate; corolla hypocrateriform, white or yellowish to dark-red (?), blackening in drying, the tube slender, straight, ventricose at the middle, villous, slightly over 3 mm. long, the limb small, villous on the back, the lobes short, the upper lip rounded, the lower lip with its middle lobe subquadrate, obtusely angled, and entire, the lateral lobes ovate and obtuse.

This species was based on a specimen collected by Friedrich Sellow in the Serra da Moeda and on specimens collected by Georg Wilhelm Freyreiss near Caravellos and in the higher Serra dos Orgaos mountains in Rio de Janeiro, Brazil. The Sellow specimen was deposited in the herbarium of the Botanisches Museum in Berlin, where it was photographed by Macbride as his type photograph number 17527, but is now destroyed, while the other specimens are in the Beyrich herbarium. The type of L. microphylla Mart. was gathered by Peter Clausen (no. 3851) in Minas Gerais, Brazil, and is deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels; Lantana microphylla Mart. is based on Glaziou 13477, also in the Brussels herbarium. It should be noted here that Lippia microphylla F. Phil. and L. microphylla R. A. Phil. are synonyms of Acantholippia deserticola (F. Phil.) Moldenke, Lippia microphylla Benth. is a synonym of L. schomburgkiana Schau., Lippia microphylla f. glabriuscula Kuntze is a synonym of L. turbinata Griseb., Lantana microphylla Franch. is a synonym of Lantana petitiana A. Rich., and Lantana microphylla Mart. belongs in the synonymy of Verbena microphylla H.B.K.

Schauer (1847) places Lippia microphylla in his Section Goniostachyum. The plant has been found in fields, on stony slopes with sandy soil, and on terra firma, at altitudes of 1300 to 2000 meters, flowering from May to July, September, October, and December. The Maguires describe it as "frequent on rock outcrops in savannas" in Rio Branco. The flowers are described as "white" on Maguire & Maguire 40286, William s.n., Mello Barreto 15010, and Macedo 2359, and as "vermelhas" on Murça Pires & Black 2536. Schauer speaks of them as yellowish, but blackening in drying. Material has been misidentified and distributed in herbaria as L.

schomburgkiana Schau., a species to which this one is obviously very closely related. On the other hand, the Glaziou 19708, distributed as L. microphylla, is actually L. pohliana Schau.

Schauer (1851) cites P. Clausen 385 and Riedel s.n. [in prov. Minas Gerais siccis umbrosis prope oppidulum S. Luciae et in collibus siccis ad Sabara] & s.n. [in fructiferis prope Villa-Rica] from Minas Gerais, Sellow s.n. [in montibus Serra da Moeda et in elatioribus Serra dos Orgaos] from Rio de Janeiro, and Freyreiss s.n. [in prov. Porto Seguro prope Caravelas] from Bahia. Glaziou (1911) cites also his no. 19708 from Minas Gerais.

In all, 31 herbarium specimens, including type material of all the names involved, and 5 mounted photographs have been examined by me.

Citations: BRITISH GUIANA: G. H. H. Tate 359 (N). BRAZIL: Bahia: Blanchet 3649 (Br, N); Freyreiss s.n. [e Brasilia] (N, S). Goiás: G. Gardner 4332 (M). Maranhão: Eiten & Eiten 4492 (W--2445202); Murça Pires & Black 1614a (Hk), 2336 (Z), 2536 (N). Minas Gerais: P. Clausen 3851 (Br), s.n. [Aug.-April 1840] (Br, Br), s.n. [1840], s.n. (Du--166579); Glaziou 14155, in part (Br); F. C. Hoehne Com. Rondon 6110 (N); Macedo 2359 (N, S); Mello Barreto 3210 (Ja--32309); Mendes Magalhães 19228 [Herb. Brad. 28162] (N); Schwacke s.n. (Ja--14898). Paraíba: Pickel 3936 (N). Rio Branco: Maguire & Maguire 40286 (N); William s.n. [Herb. Inst. Nac. Pesq. Amaz. 518] (Ok). Rio de Janeiro: Glaziou 13064 (W--1194854), 13477 (Br); Mello Barreto 15010 [Herb. Jard. Bot. Belo Horiz. 45150] (N); Sellow s.n. [Brasilia; Macbride photos 17527] (Br--cotype, Kr--photo of cotype, N--cotype, N--photo of cotype, N--photo of cotype, N--photo of cotype, Vt--cotype, W--photo of cotype).

LIPPIA MODESTA Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 311-312. 1904.

Bibliography: Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 311-312. 1904; Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1157. 1904; Briq. in Chod. & Hassler, Pl. Hassler. 2 (11): 493. 1904; Prain, Ind. Kew. Suppl. 3: 104. 1908; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 41 & 96 (1942) and [ed. 2], 99 & 190. 1949; Moldenke, Résumé 117 & 462. 1959; Troncoso, Bol. Soc. Argent. Bot. 9: 184. 1961; Troncoso, Darwiniana 12: 258, 275, & 276, fig. 9. 1961; Moldenke, Phytologia 12: 24, 135, & 136. 1965.

Illustrations: Troncoso, Darwiniana 12: 276, fig. 9. 1961.

Perennial dioecious herb or small subshrub, with a heavy creeping rhizome; serial stems simple or few-branched, 8-15 cm. tall, sparsely and antrorsely appressed-strigose; middle internodes 2-3 cm. long; leaves decussate-opposite, short-petiolate; petioles 2-5 mm. long; lower leaf-blades ovate, 1-2.5 cm. long, 1-2 cm. wide, obtuse or subobtuse at the apex, convex along the margins, rounded at the base, the upper ones larger, ovate-lanceolate or

lanceolate, 4--6 cm. long, 1--2.5 cm. wide, more acute or very acute at the apex, long-convex along the upper margins and more convex below the middle, all rather rigid, green on both surfaces, coarsely crenate-serrate along the margins with teeth 1--1.5 mm. long and 2--5 mm. apart, sparsely and antrorsely appressed-strigose, roughened but not scabrous above, the venation penninerved, subreticulate, not at all or only slightly impressed above; secondaries 4 or 5, often slightly prominulous beneath; inflorescence axillary, rather long-pedunculate; peduncles 1.5--2.5 cm. long, slender, barely equaling the subtending leaves, appressed-strigose with short antrorse hairs, with a few small stipitate glands below the head; heads about the size of a pea (*Pisum sativum*), about 7 mm. long and 6 mm. wide, cinereous; bractlets ovate, acuminate at the apex, densely strigose-pubescent on the back, the lowest 3--5 mm. long, somewhat surpassing the flowers, the rest about equaling the flowers in length; calyx minute, campanulate, scarcely 0.5 mm. long, densely pubescent on the outside, obscurely bilabiate, the lips subentire; corolla hypocrateriform, yellow, its tube surpassing the calyx-mouth by 3 mm., rather densely puberulent above, the limb 4-lobed, the lobes small, ovate, scarcely 0.5 mm. long, the anterior one longer; stamens and pistils normal for the genus, included; mericarps smooth, about 1.5 mm. long, separating with the densely pubescent calyx-segments.

The type of this species was collected by Benedict Balansa (no. 1036c) on the plain west of Cerro Peron near Pirayu, Paraguay, in June, 1874, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva. Briquet (1904) says: "Cette espèce est à peu près intermédiaire entre le *L. asperima* Cham. et le *L. trachyphylla* Briq. ci-après décrit. Elle est caractérisée par une heterophyllie assez marquée, des feuilles à peine rudes et non pas vraiment scabres et bien moins rugueuses que dans ces deux espèces. L'indument des pédoncules ressemble à celui du *L. trachyphylla*, mais ceux-ci sont plus allongés et plus tenus. Autant qu'on peut en juger sur le sec, la corolle paraît être jaune comme dans le *L. asperima*."

Troncoso (1961) cites the following specimens not as yet seen by me: PARAGUAY: Balansa 1036c (P--isotype); Hassler 6175 (Bm), 11590 (Bm, K, Le). ARGENTINA: Jujuy: Cabrera 7852 (Si). Salta: Vattuone 28 (Si); Venturi 5067 (Si), 10597 (Si). Of these she says that Vattuone 28 and Venturi 5067 are staminate, while Balansa 1036c and Venturi 10597 consist of both staminate and pistillate specimens. She comments: "Especie muy afín a *L. contermina* Briq. Se diferencia por la pubescencia, *L. modesta* presenta pelos estrigosos en tallos, hojas, pedúnculos y brácteas, a veces pelitos glandulosos muy breves en el ápice de los pedúnculos y de las brácteas. *L. contermina* posee tallos, pedúnculos, brácteas, pecíolos y envés de las hojas densamente viscoso-glanduloso-pilosos. Es una planta dioica."

Nothing is known to me about this species except what is stated

in the literature.

LIPPIA MORITZII Turcz., Bull. Soc. Nat. Mosc. 36 (2): 204. 1863.

Synonymy: Lippia floribunda Briq., Ann. Conserv. & Jard. Bot. Genève. 4: 237. 1900 [not L. floribunda Hort., 1959, nor H.B.K., 1817, nor Humb. & Bonpl., 1841, nor Humb. & Kunth, 1843, nor Kunth, 1825, nor R. A. Phil., 1891]. Lippia briquetii Moldenke, Torreya 34: 9. 1934. Lippia venezuelensis Moldenke ex H. Pittier, Supl. Pl. Usual. Venez. 62 & 119, in syn. 1939.

Bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. quart., 2: 267. 1818; Turcz., Bull. Soc. Nat. Mosc. 36 (2): 204. 1863; R. A. Phil., Anal. Mus. Nac. Chile Bot. 1: 59. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Briq., Ann. Conserv. & Jard. Bot. Genève. 4: 237. 1900; K. Schum. in Just, Bot. Jahresber. 28 (1): 497. 1902; Thiseit.-Dyer, Ind. Kew. Suppl. 2: 106. 1904; Moldenke, Torreya 34: 9. 1934; A. W. Hill, Ind. Kew. Suppl. 9: 161. 1938; H. Pittier, Supl. Pl. Usual. Venez. 55, 62, & 119. 1939; Moldenke, Alph. List Common Names 2. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 32, 95, & 96. 1942; Moldenke, Phytologia 2: 107. 1945; Moldenke, Alph. List Cit. 1: 7 & 22. 1946; Moldenke, Alph. List Invalid Names 16. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 51 & 73. 1948; Moldenke, Alph. List Cit. 2: 352, 580, & 634 (1948), 3: 820 & 974 (1949), and 4: 1075, 1079, & 1132. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 60, 63, 189, & 190. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 9. 1949; Moldenke, Résumé 67, 71, 318, 461, & 462. 1959; Moldenke, Résumé Suppl. 1: 5, 19, & 25 (1959) and 2: 4 & 9. 1960; Moldenke, Phytologia 12: 79, 111, 207, & 208. 1965.

Shrub, herbaceous shrub, or small tree, 2.5--15 m. tall; trunk thick, 10--25 cm. in diameter at breast height; bark dark-gray, rough, cracking off in thick plates; branches tetragonal, densely pubescent at the apex; leaves decussate-opposite, petiolate; petioles densely pubescent; leaf-blades ovate-lanceolate, acuminate at the apex, somewhat narrowed at the base, serrate along the margins almost to the base, scabrous, bullate-rugose above, reticulate beneath; inflorescence densely pubescent, the axillary panicles pendunculate, the terminal ones sessile, considerably compacted, trichotomous, the ultimate branches racemose; heads ovate, small, about the size of those of L. americana L.; bractlets ciliate along the margins, not on the back; flowers small; corolla white or cream-white to yellowish [or "purple"?].

The type of this species was collected by Johan Wilhelm Karl Moritz (no. 1640) -- in whose honor it was named -- near Colonia Tovar, Aragua, Venezuela. The type of L. floribunda and L. briquetii was collected by August Fendler (no. 863), also in Aragua.

It should be noted here that the L. floribunda of H.B.K., of Humb. & Bonpl., of Humb. & Kunth, and of Kunth are L. americana L., that of R. A. Phil. is Aloysia reichii Moldenke, and that of Hort. is Lantana achyranthifolia Desf. The Triana 2043 & 3684, distrib-

uted as L. floribunda, are L. schlimii var. glabrescens (Moldenke) Moldenke. Material of L. moritzii has been misidentified and distributed in herbaria under the names L. callicarpaefolia H.B.K., L. floribunda H.B.K., L. hirsuta L., L. hirsuta L. f., Buddleia sp., and Hyptis sp. On the other hand, the Cuatrecasas 13572, García y Barriga 11011, Herb. Mus. Paris 1, Little & Little 9228 & 9795, F. W. Pennell 2462, and Triana 148, distributed as L. moritzii, are actually all L. hirsuta L. f.

Lippia moritzii has been found growing on hills and densely wooded slopes, in meadows, bushes, woods, thickets, and forests, dwarf forests, open canyon bottoms in dwarf forests, "lomas aridas", and land of the disturbed paramillo shrub type, at altitudes of 800 to 3200 meters, flowering from May to March, fruiting from September to January and in March and July.

Bernardi describes the plant as follows: "arbol pequeño, corteza escamosa, de color claro, florecitas cremosas; hojas discoloras, envés mas claro, haz manchado de blanco asperos y aromático". Common names recorded for it are "amogre", "cariague", "mérica", "mogre", and "salvia". The flowers are described as "white" on Fosberg 22193, H. Pittier 9966 & 13779, and Sneider 3016, as "cream-white" on Williams & Alston 18, as "yellowish" on H. Pittier 9870, and as "purple" on H. Pittier 9869. The Jahn 1140 cited below from Trujillo may actually have been collected in Mérida, since its label is merely inscribed "La Puerto to Timotes".

In all, 51 herbarium specimens and 5 mounted photographs, including type or phototype material of all the names involved, have been examined by me.

Citations: COLOMBIA: Boyacá: Cuatrecasas 1863 (W--1773188); F. R. Fosberg 22193 (N). Caldas: Sneider 3016 (S), 3089 (S). Cundinamarca: Koe 4524 (Cp, Z); Triana 2049 (Br). Magdalena: Seifritz 397 (W--1572471). Department undetermined: Henri 1 [San Cristóbal] (W--2383065). VENEZUELA: Aragua: Allart 288, in part (Ve--12773), 288a (W--1231237); Fendler 863 (Br, F--photo, N, N--photo, Si--photo, Z--photo); Lasser & Foldats 4276 (Ve); Moritz 1640 (Z--photo of type); H. Pittier 9966 (N, W--1186992); Steyermark 91592 (Ve). Federal District: Allart 85 (N, Ve--12777, W--1199018), 167 (N, Ve, W--1231158); Badillo 694 (Ve--12770); Bailey & Bailey 994 (Ba, W--1198400); Delgado 54 (Ve--12771, W--1692661), 507 (Ve); Eggers 13580 (Lu, S, W--939323, W--1234732); Lasser 1008 (W--1878281), s.n. [Steyermark 55099] (F--1205145); H. Pittier 9869 (W--1186477), 9870 (N, W--1186478), 9966 (N), 12251 (Kr), 13779 (Ve--12772, W--1740474); Ll. Williams 10625 (Ve--12769), 12251 (Ca--734500, W--1778908); Williams & Alston 18 [Ll. Williams 10625] (Ve--12768). Mérida: Bernardi 3735 (Ve), 6399 (N). Miranda: Allart 288, in part (N). Trujillo: Jahn 1140 (Ve, W--1186740).

LIPPIA MORONGII Kuntze, Rev. Gen. Pl. 3 (2): 253. 1898.

Synonymy: Lippia angustifolia Morong ex Kuntze, Rev. Gen. Pl. 3 (2): 253, in syn. 1898 [not L. angustifolia Cham., 1832].

Bibliography: Morong, Britton, & Vail, Ann. N. Y. Acad. Sci. 7: 196. 1892; Kuntze, Rev. Gen. Pl. 3 (2): 253. 1898; Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 314-315. 1904; Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1159. 1904; Briq. in Chod. & Hassler, Pl. Hassler. 2 (11): 494. 1904; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 106. 1904; Hassler, Fl. Pilc. 102. 1909; Herter, Revist. Sudam. Bot. 4: 186. 1937; Moldenke, Lilloa 5: 424. 1940; Moldenke, Suppl. List Invalid Names 5. 1941; Moldenke, Alph. List Invalid Names 29. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 41, 43, & 96. 1942; Moldenke, Lilloa 8: 424. 1942; Augusto, Fl. Rio Grande do Sul 235. 1946; Moldenke, Phytologia 2: 385 & 386. 1947; Moldenke, Lilloa 14: 44 & 45. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 73. 1948; Moldenke, Alph. List Cit. 2: 357, 358, 441, 532, 628, & 629 (1948) and 3: 689, 704, 705, 749, 863, 875, & 913. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80, 99, 100, 105, & 190. 1949; Moldenke, Phytologia 3: 376 (1950) and 5: 96. 1954; Moldenke, Inform. Mold. Set 49 Spec. 2. 1954; Moldenke, Résumé 94, 117, 119, 125, 310, 314, & 462. 1959; Troncoso, Bol. Soc. Argent. Bot. 9: 184. 1961; Moldenke, Phytologia 12: 84, 90, 92, 93, & 136. 1965.

Suffrutescent, 3--12 dm. tall, dioecious; stems tetragonal, appressed-hairy; internodes elongate; leaves decussate-opposite, sessile or short-petiolate; leaf-blades narrowly lanceolate, 6--10 cm. long, 1--1.5 cm. wide, serrate along the margins with many teeth, attenuate into the petiole at the base, appressed-hairy, divaricately penninerved, not 3-plinerved, the secondaries spreading, not ascending; inflorescence not paniculate; peduncles axillary, equaling or longer than the upper scarcely smaller leaves; heads small; flowers small, nearly concealed by the cuspidate-acuminate bractlets; corolla hypocateriform, yellow or clear-yellow and rose, usually at first yellow, turning orange or orange-rose in age.

The type of this species was collected by Thomas Morong (no. 860) -- in whose honor it was named -- among tall grass on a campo at the Pilcomayo River, Paraguay, on January 9, 1890, where it is described as being "common", and is deposited in the Columbia University Herbarium at the New York Botanical Garden. It is listed in Morong's field notebook no. 4, page 8.

Kuntze (1898) says "L. angustifolia Morong 'Cham.' [sed non Cham.] in Paraguay Plants 196. Ab L. angustifolia a differt foliis serratis dentibus multis, in petiolum brevem attenuatis divaricato-pinnatinervis (haud triplinervis cum nervis ceteris adscendentibus); inflorescentia haud paniculata, ob folia summa haud deminuta, pedunculo aequilongo vel longior. Concepcion de Paraguay. Morong beschreibt die Art ziemlich gut, aber ausser den Bluthen und Bracteen weicht sie von L. angustifolia bedeutend ab."

Briquet (1904) comments: "M. Kuntze.....a attire l'attention sur le fait que le L. angustifolia de Morong diffère totalement de celui de Chamisso. Le premier appartient au groupe des Zapania à pedoncules axillaires (d'ailleurs de moitié au moins plus courts que les feuilles), tandis que le second appartient au groupe de cette section à panicule terminale. Le L. Morongii ressemble beaucoup dans ses formes réduites au L. turnerifolia β angusta, quoique le plus souvent son port plus robuste et ses feuilles moins rugueuses le fassent facilement reconnaître. Il s'en distingue essentiellement par l'absence de poils allongés et $\pm$ étalés, exclusivement remplacés par de poils strigieux ascendants et courts; en outre, les bractéoles extérieures des capitules sont largement ovées-acuminées."

The species has been found growing in dry sandy sunny soil, on open or dry exposed sandy campos, wet sandy campos, and spiny or shrubby campos, at altitudes of 40--60 meters, flowering from October to February and in April. Rosengurtt refers to it as "escasa en praderas". A vernacular name recorded for it is "salvia de flores amarillas". Meyer calls it "rather rare in fertile ground".

Material has been misidentified and distributed in herbaria under the names L. asperrima Cham., L. asperrima var. longipedunculata Moldenke, L. imbricata Kuntze, L. turneraefolia Cham., L. turnerifolia Cham., L. turnerifolia Cham. & Schlecht., and Lantana turneraefolia Cham. Meyer 255b was determined as "Lippia asperrima forma?" by Osten.

The corollas are described as "yellow" on Herter 989, Malme 1078 & 2791, T. Meyer 291, Rambo 25783, and A. G. Schulz 8683, as "clear yellow and rose" on T. Rojas 2541, and as "at first yellow, later orange-rose" on A. G. Schulz 8685.

A. G. Schulz describes the two types of flowers in this species, as exemplified by his nos. 8683 and 8685, as follows: 8683 -- la flor no es rojiza pasada la antesis; caliz alto; bractea abarquillada; flor amarilla; campo-prado, suelo fertil. 8685 -- campo-prado, suelo alto, fertil; flor amarilla, luego rojiza-anaranjada; pasada la antesis la flor es rojiza o anaranjada; caliz muy bajo; bractea plana, estacha." His illustrations of the floral parts of these two types of flowers are reproduced in the following text figures: ["dibujos a camera clara x 20; 26-II-1954"]

Fig. 1 -- 8683, calyx and corolla seen from the front

Fig. 2 -- 8683, calyx and corolla seen from the back

Fig. 3 -- 8683, calyx and corolla seen from the side

Fig. 4 -- 8683, bractlet (boat-shaped, the veins anastomosing)

Fig. 5 -- 8683, calyx

Fig. 11 -- 8685, gynoecium

Fig. 6 -- 8683, fruit

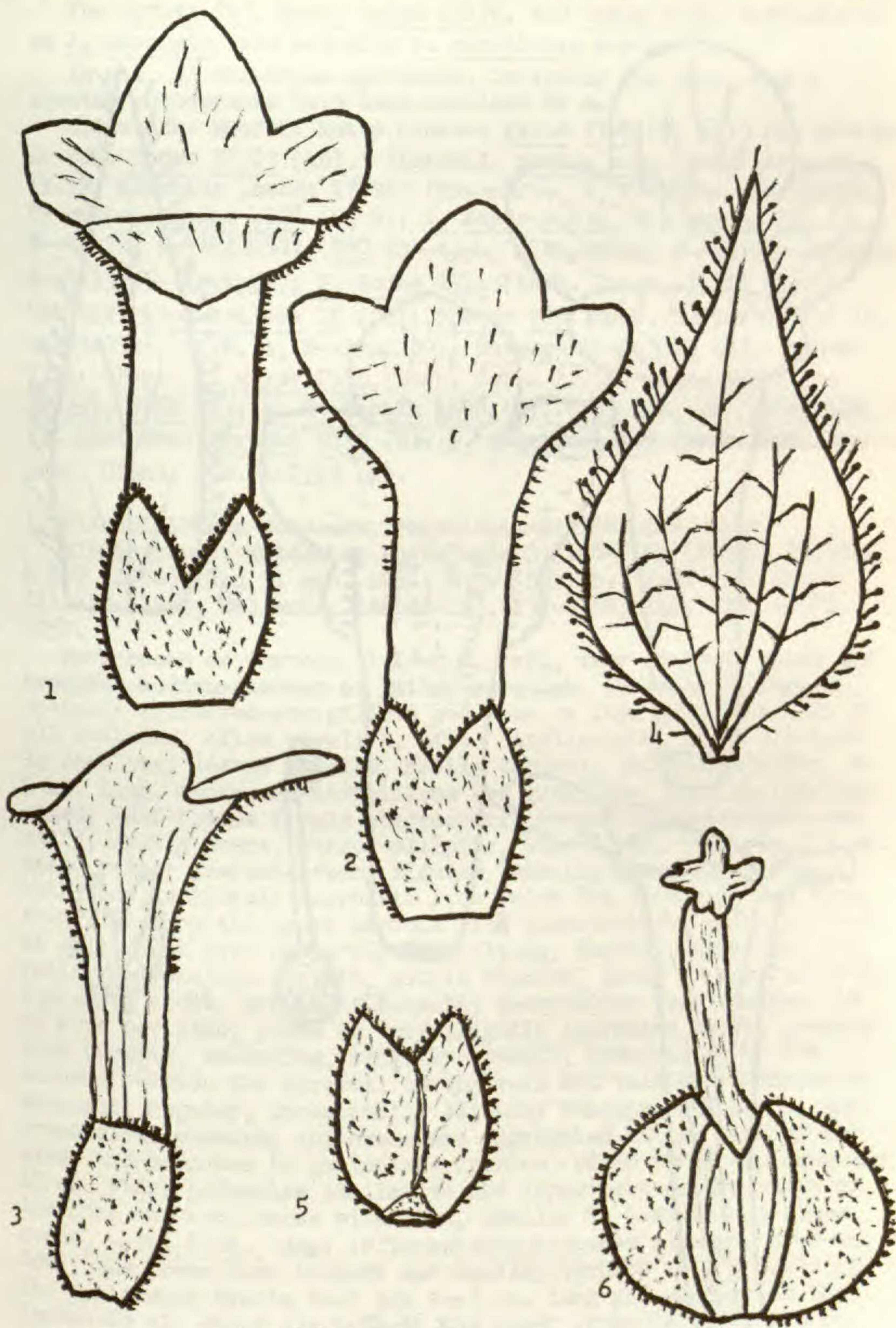
Fig. 12 -- 8685, calyx

Fig. 7 -- 8685, corolla seen from the front

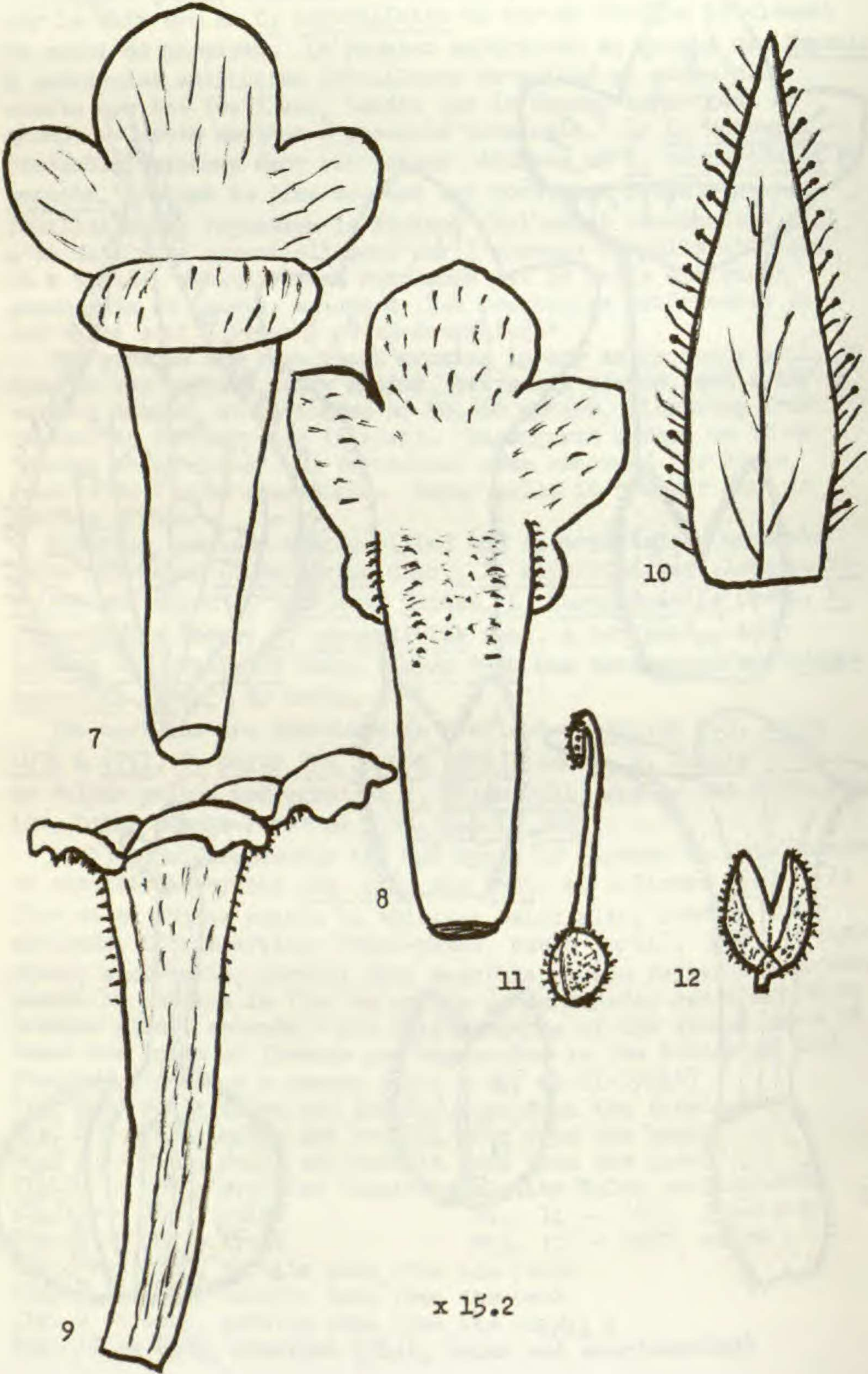
Fig. 8 -- 8685, corolla seen from the back

Fig. 9 -- 8685, corolla seen from the side

Fig. 10 -- 8685, bractlet (flat, veins not anastomosing)



x 15.2



x 15.2

The Grüner 597, Herb. Osten 23175, and Osten 9012, distributed as L. morongii, are actually L. recolletae Morong.

In all, 33 herbarium specimens, including the type, and 3 mounted photographs have been examined by me.

Citations: BRAZIL: Matto Grosso: Malme 2791 (N, S). Rio Grande do Sul: Rambo 25783 (Rb). PARAGUAY: Kuntze s.n. [Nord Paraguay, IX.92; Macbride photos 17528] (Kr--photo, N, N--photo, W--701016, W--photo); Malme 1078 (S, S); T. Meyer 16038 (N); Morong 575 (C, W--72477, W--1417058), 860 (C--type, C--isotype, W--72762--isotype, W--1417055--isotype); T. Rojas 2541 [Herb. Osten 18188] (Ug). URUGUAY: Arechavaleta 15 (Cb); Herter 989 [Herb. Herter 82594] (B, Ca--323325, N, N, S, W--1344189); Rosengurt B.3383 (N). ARGENTINA: Chaco: T. Meyer 255b [Herb. Osten 22947] (Ug), 291 (Ug--10939), 8755 (N); A. G. Schulz 1498 (N), 8683 (Cb, Hk), 8685 (Hk, Z). Misiones: Bertoni 2450 (N); D. Rodriguez 409 [Herb. Mus. Argent. Cienc. Nat. 16278] (N).

LIPPIA MULTIFLORA Moldenke, Phytologia 3: 168--169. 1949.

Bibliography: Moldenke, Phytologia 3: 168--169 (1949), 3: 291 & 292 (1950), and 3: 466. 1951; E. J. Salisb., Ind. Kew. Suppl. 11: 138. 1953; Moldenke, Résumé 133, 137--140, 142, 220, & 462. 1959.

Herbaceous or shrubby, 1.1--3 m. tall, very odorous; stems and branches medium-slender or rather stoutish, obtusely tetragonal, sparsely appressed-strigillose and more or less granulose, not at all scabrous, often purplish, often canaliculate; nodes distinctly annulate; leaves whorled, mostly ternate; petioles slender, 2--5 mm. long, appressed-strigillose and granulose, more or less margined; leaf-blades firmly chartaceous, rather thick-textured and stiff, mostly erect, narrow-elliptic, 5.5--13 cm. long, 1--3.3 cm. wide, rather grayish-green, lighter beneath, attenuate-acute at both ends, uniformly serrulate from below the middle to the apex, strigillose on the upper surface with bulbous-based hairs but not at all or but very obscurely scabrellous, densely puberulent and resinous-granulose beneath; midrib slender, plane or very slightly impressed above, prominent beneath; secondaries very slender, 10 or more per side, plane or very slightly impressed above, prominent beneath, ascending, slightly arcuate, terminating in the sinuses between the marginal teeth; vein and veinlet reticulation abundant, regular, occasionally slightly subimpressed above, subprominulous beneath; inflorescence aggregated at the tips of the stems and branches in paniculate fashion, often to 20 cm. long and 10 cm. wide; peduncles similar to the upper part of the stems or branches and continuous with them, similar in texture and pubescence, about 8 cm. long; inflorescence-branches slender, 2--8 cm. long, the lower ones longest and usually ternate in the axils of the foliaceous bracts that are 2--3 cm. long and similar to the leaves in all other characters, the upper irregularly clustered in the axils of smaller and narrower bracts; spikes subcapitate in

anthesis, becoming cylindric-oblong and to 2 cm. long, congested on densely appressed-pubescent stalks 3--10 mm. long, densely many-flowered; lowermost bractlets broadly ovate, about 3 mm. long and 2 mm. wide, the upper ones obovate and somewhat smaller, all densely imbricate, short-acuminate at the apex, densely white-villosulous with appressed antrorse hairs on the back; flowers very small, the calyx densely spreading-hirsutulous, the white or whitish corollas with an infundibular tube about 2 mm. long, very slender at the base, ampliate to 1 mm. at the apex, the slender portion glabrous, the expanded portion strigillose on the outer surface, the limb irregularly 2-lipped, the upper lip erect, about 1 mm. long, the lower lip 3-lobed, the lobes about 0.5 mm. long, ovate.

The type of this apparently widespread species was collected by Charles Barter (no. 768), probably in Northern Nigeria, while on Dr. Baikie's Niger Expedition between 1857 and 1859, and is deposited in the Torrey Herbarium at the New York Botanical Garden. I am indebted to my colleague, R. D. Meikle, of the Royal Botanic Gardens, Kew, for pointing out to me the differences between this species and *L. rugosa* A. Chev., with which it had previously been confused by me. In a letter to me dated September 9, 1949, he says that the type specimen of *L. rugosa* has very scabrid leaves and stems and long-acuminate and rather thinly pubescent flowering bracts, whereas the leaves of *L. multiflora* are at most only very slightly scabridulous, the stems are smooth, and the flowering bracts are densely white-tomentose and only short-acuminate.

Lippia multiflora has been found at altitudes of 480 to 820 meters, flowering from January to August and in October, fruiting in April and July, growing on savannas and at the edge of water. Mullenders reports finding it on the Marraïss Exonde formation. Thonner reports it "very common" in the Congo. Jespersen comments "l'odeur est très oenetrante", while Belot says "odeur légère". Lebrun says "Tiges canées; infl. regular. étalée en ombelles, globuleux." The plant is cultivated in the Congo to extract a perfume, and is used by the natives as a vomitive and as a medicine in the treatment of stomach ache.

Common names recorded for this plant are "angasagne", "angasay", "bonjutu", "bulukutu", "ebolo", "esisi", "likangamo", "lokindola", "makubambo", "niemba", and "niembe". The corollas are described as "white" on Bequaert 7630, Johnson 584, Lebrun 3143, Mullenders 647, and Thonner 234, and as "whitish" on Laurent & Laurent s.n. [27.10.03]. Material has been misidentified and distributed in herbaria under the names *L. adoensis* Hochst., *L. nigeriensis* Moldenke, *L. rugosa* A. Chev., *Acrocephalus masuianus* Briq., and even *Vernonia* sp.

In all, 155 herbarium specimens, including the type, have been examined by me.

Citations: DAHOMEY: Poisson s.n. (S). SIERRA LEONE: Smythe 121 (K). GHANA: Johnson 584 (K); Kitson s.n. [Gold Coast, 1916] (N); Vigne 1813 (Br), 3889 (K). TOGOLAND: Baumann 401 (Br, N). NIGERIA:

Northern: Barter 768 (S—isotype, T—type, Ut—11489—isotype).
 Southern: Millen 143 (K). CAMEROONS: Zenker & Staudt 562 (S).
 CONGO BRAZZAVILLE: Hakanson 3019 (S); Soyaux 67 (K). CENTRAL AF-
 RICAN REPUBLIC: A. Chevalier 5395 (Br). CONGO LEOPOLDVILLE: Al-
lard 19 (Br); Belot 45 (Br); Bequaert 547 (Br), 2764 (Br), 7396
 (Br), 7630 (Br); Blommaert 147 (Br); Claessens 3 (Br), 5 (Br), s.
 n. [env. de Boma, 1921] (Br, Br); Collector undesignated 178 (Br),
 388 (Br), 388 bis (Br); Corbisier-Balanot 880 (Br, Br); Coiteaux
G.278 (Br); Dacrémont 239 (Br, Br, Br); De Giorgi 211 (Br); De
Graer 33 (Br); Dewevre 388 (Br); De Wulf 185 (Br); Dobbelaere 23
 (Br); Dubois 330 (Br, Br, Br); Dupuis s.n. [1894] (Br), s.n.
 [Binguela] (Br, Br, Br, Br, Br); Egger 1911 (Br); Elskens s.n.
 [20 juillet 1918] (Br); Feller A.19 (Br); Flamigni 118 (Br); Gil-
let 31 (Br), 917 (Br), 3672 (Br), s.n. [1898] (Br); A. P. G.
Goossens 4896 (Br, S), 5074 (Br, N, S); V. Goossens 1260 (Br);
Hendrick & Gillet 3088 (Br); Herb. Jard. Bot. Brux. "D" (Br);
Herb. Mus. Congo s.n. [1942] (Br); Lambueroy 78 (Br); M. Laurent
165 (Br), 739 (Br), 1917 (Br), 1948 (Br); Laurent & Laurent s.n.
 [27.10.03] (Br), s.n. [Bas Ubangi, 18/11/03] (Br), s.n. [4/1/06]
 (Br); Lebrun 3143 (Br), 6747 (Ca—915227); Ledoux & Huyghe 9
 (Br); Leemans 418 (Br, Br, Br); Luja 189 (Br); Montagne 34 (Br),
 151 (Br); Mortehan 132 (Br); Mullenders 647 (Br); Nannan 151
 (Br); Nélis s.n. [Bokala, Mai 13, 1913] (Br), s.n. [Bokala, Mai
 1913] (Br), s.n. [Bokala, Mai 1915] (Br); Pittery 822 (Br); Py-
naert 256 (Br), 919 (Br), 1082 (Br), 1500 (Br), s.n. [1907] (Br);
Roucous s.n. [1-4-1913] (Br); Sapin s.n. [Gombé, 1912] (Br); Seret
142 (Br); Thonner 234 (Br); Tidao s.n. [Jct. of Ubangi & Congo
 rivers, Dec. 1916] (Ca—54394); Vanderyst 613 (Br), 1207 (Br),
 1271 (Br), 1352 (Br), 1589 (Br), 1687 (Br), 3642 (Br), 4080 (Br),
 17403 (Br), 21131 (Br), 22105 (Br), 22166 (Br), 22843 (Br), 22969
 (Br), 23123 (Br), 23998 (Br, Br), 29412 (Br), 29512 (Br), 30958
 (Br, Br, Br), 32105 (Br), 32178 (Br, Br), 32179 (Br, Br), 32280
 (Br), 33212 (Br), 34106 (Br), B.106 (Br), s.n. [1907] (Br), s.n.
 [Mai 1908] (Br), s.n. [11/1910] (Br), s.n. [Leopoldville, 1910]
 (Br), s.n. [14 avril 1911] (Br), s.n. [27 avril 1911] (Br), s.n.
 [22 juin 1911] (Br), s.n. [Wombali, 11/1911] (Br); Vanderyst &
Lambrette 5577 (Br); Vermoesen 2027 (Br), 2028 (Br); Verschueren
458 (Br), 601 (Br), 633 (Br), 753 (Br), 865 (Br); Wilwerth s.n.
 [Upoto, 1896] (Br). CULTIVATED: Congo Leopoldville: De Giorgi
974 (Br); Jespersen 13 (Br), 14 (Br); Vanderyst 20934 (Br), 31735
 (Br), 31743 (Br).

LIPPIA MULTIFLORA var. PUBESCENS Moldenke, Phytologia 3: 271.1950.
 Bibliography: Moldenke, Phytologia 3: 271. 1950; Moldenke, Ré-

sumé 138 & 462. 1959.

This variety differs from the typical form of the species in having its stems and branches, as well as the petioles and peduncles, densely strigose-pubescent, and its leaf-blades more or less scabrous-pilose above and densely short-pilose beneath.

The type of the variety was collected by H. V. Lely (no. 241) at Naraguta, at an altitude of 4000 feet, Northern Nigeria, on May 30, 1921, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. Its pubescence renders this variety very distinct. It is said to grow 18 to 24 inches tall and to have hard heads of purplish flowers. Thus far it is known only from the type collection. In all, 2 herbarium specimens and 4 mounted photographs have been examined by me.

Citations: NIGERIA: Northern: Lely 241 (F--photo of type, K--type, N--photo of type, N--isotype, Sg--photo of type, Z--photo of type).

LIPPIA MYRIOCEPHALA Schlecht. & Cham., *Linnaea* 5: 98. 1830.

Synonymy: *Lippia myriocephala* Cham. & Schlecht. ex Gandoger, *Bull. Soc. Bot. France* 65: 53 [as "*myriocephalae*"]. 1918. *Lippia lancifolia* Sessé & Moc. ex Moldenke, *Prelim. Alph. List Invalid Names* 31, in syn. 1940. *Lippia mycrocephala* Schlecht., in herb.

Bibliography: Schlecht. & Cham., *Linnaea* 5: 98. 1830; Steud., *Nom. Bot.*, ed. 2, 2: 54. 1840; Walp., *Repert. Bot. Syst.* 4: 52-53. 1845; Benth., *Bot. Voy. Sulphur* 154. 1846; Schau. in A. DC., *Prodr.* 11: 580. 1847; Jacks. in Hook. f. & Jacks., *Ind. Kew.* 2: 95. 1894; Loes., *Verh. Bor. Ver. Brand.* 53: 77 [Abhandl. 242]. 1912; Gandoger, *Bull. Soc. Bot. France* 65: 63. 1918; P. C. Standl., *Contrib. U. S. Nat. Herb.* 23: 1244 & 1247. 1924; A. B. Seymour, *Host Ind. Fungi N. Am.* 588. 1929; C. L. Lundell, *Carnegie Inst. Wash. Publ.* 478: 45, 75, 135, 137, 183, 194, & 203. 1937; P. C. Standl., *Field Mus. Publ. Bot.* 18: 1009 & 1010. 1938; Moldenke, *Alph. List Common Names* 29 & 32. 1939; Moldenke, *Prelim. Alph. List Invalid Names* 31. 1940; Moldenke, *Carnegie Inst. Wash. Publ.* 522: 169. 1940; Calderón & Standl., *Fl. Salvador.*, ed. 2, 238. 1941; C. L. Lundell, *Contrib. Univ. Mich. Herb.* 8: 61. 1942; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 17, 20, 21, & 96. 1942; Moldenke, *Alph. List Invalid Names* 31. 1942; Moldenke, *Phytologia* 2: 107. 1945; Moldenke, *Alph. List Cit.* 1: 53 & 54. 1946; Moldenke, *Alph. List Invalid Names* 14. 1947; Moldenke, *Bol. Soc. Venez. Cienc. Nat.* 11: 43. 1947; Moldenke, *Alph. List Cit.* 2: 351, 536, 554, & 588 (1948), 3: 663, 714, 715, 754, 755, 891, 926, 948, 958, 961, & 973 (1949), and 4: 1013, 1095, 1097, & 1295; H. N. & A. L. Moldenke, *Anal. Inst. Biol. Mex.* 20: 10. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 31, 35, 37, 38, & 190. 1949; Matuda, *Am. Midl. Nat.* 44: 576. 1950; Calpouzos, *Econom. Bot.* 8: 228. 1954; Moldenke, *Résumé* 37, 42, 44, 45, 313, 315, & 462. 1959; Moldenke, *Résumé Suppl.* 1: 3 (1959) and 2: 4. 1960; Moldenke, *Phytologia* 12: 24, 115, 142, 189, 215, & 216. 1965.

Shrub or tree, to 12 m. tall; crown spreading; branches tet-

ragonal, pubescent; leaves decussate-opposite, very pubescent when young or only the youngest pubescent beneath, the lower ones largest; petioles short; leaf-blades membranous, dull-green above, paler beneath, lanceolate or elliptic-lanceolate to lanceolate-oblong, 6--18 cm. long, about 5 cm. wide, usually long-acuminate at the apex, acute to attenuate at the base, finely or obsoletely serrate along the margins, scabridous-hirtellous to scaberulous or glabrescent and smooth above, sparsely and rather softly puberulent or glabrate beneath, sometimes tomentose or puberulent-hirtellous on the venation only, penninerved; midrib and secondaries somewhat impressed above, prominent beneath; peduncles slender or filiform, long, about half as long as the subtending leaves; heads usually numerous (about 5) at each node, fasciculate, globose or somewhat elongate, 5--7 mm. in diameter; bractlets not at all or scarcely accrescent in age, ovate, acuminate or acute at the apex, patulous, puberulent; corolla hypocrateriform, dull-yellowish or greenish-yellow to white or lilac.

The type of this species was collected by Christian Julius Wilhelm Schiede and Ferdinand Deppe in the woods about Jalapa, Vera Cruz, Mexico. The species is no. 133 in Schlechtendal and Chamisso's enumeration, and these authors describe the flower heads as being about the size of a grain of pepper (Piper nigrum).

Schauer (1847) classifies the species in his Section Dipterocalyx. It has been found on open hillsides, at the edge of rivers, in thickets or rocky thickets, damp or dry thickets, forests and open forests, pine-oak forests, canyons, and pine and oak regions near rivers, at altitudes of 350 to 3000 meters, flowering from October to April, July, and September, and fruiting from December to April and July. Allen refers to it as "very common, forming almost pure stands in some places" in El Salvador; Standley calls it "common" in Guatemala; and Standley & Calderón call it "scarce" in Honduras. Standley states that it produces good wood for houses and other uses in El Salvador. The flowers are described as "greenish-yellow" on P. H. Allen 7224 and as "dull-yellowish" on P. C. Standley 29628.

Vernacular names applied to this plant are "carbonero", "macahuite", "oreganillo", "salvia", "tamayagua", "tatascame", and "vera blanca". It should be noted that "oreganillo" is applied also to L. cardiostegia Benth., L. graveolens H.B.K., and L. umbellata Cav.

Gandoger (1918) cites Ehrenberg 1202 as typical of L. myriocephala and compares his L. melastomifolia with it, which see. Lippia myriocephala is attacked by the fungi Bullaria elatipes (Arth. & Holw.) Arth. & Mains, Puccinia elatipes Arth. & Holw., Prospodium lippiae (Speg.) Arth., Puccinia lippiae Speg., Uredo lippiae Speg., Micropuccinia permagna (Arth. & Holw.) Arth. & Jacks., Puccinia permagna Arth. & Holw., and P. senilis Arth.

Material of this species has been misidentified and distributed in herbaria as Baccharis sp. On the other hand, the Tucker 793 and

Türckheim II.1474, distributed as L. myriocephala, are actually var. integrifolia Loes.; H. Pittier 7519, Herb. Inst. Physico-geogr. Nat. Costaric. 13215, Stork & Horton 8646, and Tonduz 1460 are L. cardiostegia Benth.; Echeverria 6, Skutch 2292, and Tonduz 1262 are L. costaricensis Moldenke; Aguilar Hidalgo 394, H. H. Bartlett 13008, M. C. Carlson 430 & 431, Dressler & Jones 190, Herb. Mus. Yale School Forest. 10041, Kenoyer s.n. [Valles, 9-3-38], C. L. Lundell 2780 & 3171, Pringle 3277 & 11668, Purpus 2254, 5751, 8648, & 11668, Record & Kuylen G.90, W. Schaffner 1, and C. L. Smith 1076 are all L. hypoleia Briq.; and the Calvert & Calvert s.n. from Costa Rica is not verbenaceous. Standley (1938) says: "A good many Costa Rican collections have been referred to this Mexican species, but I have seen only two that seemed properly referable here, and these I am unable to distinguish from the typical form. It may be, however, that careful study will show that the collections I have placed here are properly referable elsewhere." The L. myriocephala of Lundell (1937) is L. hypoleia.

It is actually probable that L. hypoleia should be regarded as nothing more than a variety of L. myriocephala.

In the Harvard University herbaria the following specimens are also filed under L. myriocephala, but have not as yet been verified by me: MEXICO: Chiapas: E. W. Nelson 3075 (G). Oaxaca: L. C. Smith 598 (G). San Luis Potosí: Seler & Seler 743 (G). Vera Cruz: Seler & Seler 3649 (G). GUATEMALA: El Progreso: Steyermark 42988 (A). HONDURAS: Morazan: L. O. Williams 17403 (G); Williams & Molina R. 13710 (G). Tegucigalpa: J. B. Edwards P.1 (G), also wood collection). EL SALVADOR: Cuscatlan: Calderón 1995 (G). NICARAGUA: Granada: Ørsted 11223 (A). COSTA RICA: Cartago: Dodge & Thomas 4519 (G). San José: Holway 404 (G); H. Pittier 7111 [Herb. Nat. Costaric. 8452] (G). The last two mentioned are certainly not this species.

In all, 55 herbarium specimens, including the type of one of the names involved, have been examined by me.

Citations: MEXICO: Chiapas: Matuda 610 (Mh, Mi), 707 (Mh, Mi, N, N), 849 (Mh, Mi, N, N), 3642 (A, N), S.67 (A, Mi, N, N, N). Tabasco: Linden 530 (Br); J. N. Rovirosa 286 (Pa). Vera Cruz: Galeotti 775 (Br, Br); F. W. Johnson s.n. [Sept. 22, 1906] (N); Langman 3654 (W--1976428); F. Muller 276 (M), s.n. [Orizaba, 1855] (M); Purpus 8707 (Ca--208461); Sallé s.n. [Orizaba] (Cb). State undetermined: Botteri s.n. [1856] (Cb); Quarles van Ufford 123 [Finca S. Antonio] (Ut); Sessé, Mocino, Castillo, & Maldonado 2222 (Q). GUATEMALA: Alta Verapaz: Türckheim 7933 (A, C, G). Baja Verapaz: P. C. Standley 91087 (N). Quezaltenango: P. C. Standley 68071 (N), 87087 (N). Sacatepéquez: J. D. Smith 1450 (G); P. C. Standley 63275 (A, N), 65031 (A, N). San Marcos: Steyermark

36327 (F--1033912). Santa Rosa: Heyde & Lux 4386 (C, G), 4388 (C, G). HONDURAS: Comayagua: Standley & Chacón P.6832 (N). Tegucigalpa: Von Hagen & Von Hagen 1225 (N). EL SALVADOR: San Salvador: P. C. Standley 20628 (G, N). San Vicente: P. C. Standley 21536 (G, N). Sonsonate: P. H. Allen 7224 (G, N, Rf).

LIPPIA MYRIOCEPHALA var. INTEGRIFOLIA Loes., Verh. Bot. Ver. Brand. 53: 77 [Abhandl. 242]. 1912.

Bibliography: Loes., Verh. Bot. Ver. Brand. 53: 77 [Abhandl. 242]. 1912; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 20 & 96 (1942) and [ed. 2], 35 & 190. 1949; Moldenke, Alph. List Cit. 3: 919, 961, 962, & 973 (1949) and 4: 1012 & 1013. 1949; Moldenke, Résumé 42 & 462. 1959; Moldenke, Résumé Suppl. 3: 11. 1962.

This variety differs from the typical form of the species in having entire leaf-blades. It is described by collectors as a shrub or small tree, to 10 m. tall, spreading; leaf-blades firmly membranous, dark- or deep-green above, dull-green or grayish beneath; corolla whitish, white with a yellow throat, or white with lilac at the tip.

The variety was based by Loesener on a collection made by Hans von Türckheim (no. 1088) at Coban, at an altitude of 4300 feet, Alta Verapaz, Guatemala, in November, 1886, and on two collections made by Caecilia and Georg Eduard Seler (nos. 2485 & 3400) at the same locality, the former collected on December 6, 1896, and the latter collected on a wooded hillside on December 23, 1896.

The variety has been found on dry rocky hills and wooded hillsides, in wooded quebradas, oak forests and pine-oak forests, at altitudes of 300 to 2000 meters, flowering from November to January and March, fruiting in December and March. The flowers are described as "white with lilac at tip" on Steyermark 33152, as "whitish" on Steyermark 44874, and as "white, throat yellow inside" on Tucker 793. Standley describes the plant as "common" in Baja Verapaz.

In all, 16 herbarium specimens, including type material, and 7 mounted photographs have been examined by me.

Citations: GUATEMALA: Alta Verapaz: Seler & Seler 2485 (G--cotype, N--photo of cotype, Z--photo of cotype), 3400 (G--cotype, Gg--245894--cotype, N--cotype, N--photo of cotype, Z--photo of cotype); Steyermark 44874 (N); Türckheim 1088 (G--cotype, N--cotype, N--photo of cotype, S--photo of cotype, Z--photo of cotype), II. 1474 (Br, Br, I, Mi). Baja Verapaz: P. C. Standley 69693 (N). Sacatepéquez: P. C. Standley 80854 (N), 88967 (N). Santa Rosa: Steyermark 33152 (F--1034000). EL SALVADOR: Morazán: Tucker 793 (Ca--903).

LIPPIA NANA Schau. in A. DC., Prodr. 11: 582. 1847.

Bibliography: Schau. in A. DC., Prodr. 11: 582. 1847; Schau. in Mart., Fl. Bras. 9: 235. 1851; Jacks. in Hook. f. & Jacks., Ind.

Kew. 2: 95. 1894; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 96. 1942; Moldenke, Phytologia 2: 385. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80 & 190. 1949; Moldenke, Alph. List Cit. 3: 695 & 847. 1949; Moldenke, Phytologia 4: 70. 1952; Moldenke, Résumé 94 & 462. 1959; Moldenke, Phytologia 12: 24. 1965.

Perennial plant, with a creeping woody rhizome; stems erect, herbaceous, 5--10 cm. tall, viscid-pubescent; leaves decussate-opposite, remote, sessile, the upper ones lanceolate, about 5 cm. long, about 1.4 cm. wide, acute at the apex, entire and cuneate at the base, crenate-serrate toward the apex, 3-plinerved, subglabrous on the lamina, strigose-puberulent on the venation, the midrib pinnately branched, decreasing in size toward the base of the stems, the lowest scale-like but still floriferous in their axils; peduncles filiform, equaling or surpassing the internodes, issuing even from the lowest leaf-axils, viscid-pubescent; heads globose, many-flowered, 8--10 mm. in diameter; exterior bractlets involucrate, ovate, the interior ones oblong, somewhat larger, equaling the corolla-tube, subacute at the apex, all viscid-pubescent and ciliate; flowers rather large; calyx membranous, very short, scarcely 4-dentate or even diphyllous, pubescent, very shortly ciliate; corolla hypocrateriform, its tube straight, 4 mm. long, slightly ampliate and puberulent at the throat, the limb 4-fid, the lateral lobes rounded, the upper smaller, the lower larger, subretuse; style half as long as the corolla-tube, smooth, subacute; stigma unilateral at the apex, punctiform; ovary glabrous.

The type of this most distinct species was collected by Johann Emanuel Pohl (no. 6063) in the Serra Urubu, Goiás, Brazil, and is deposited in the herbarium of the Naturhistorisches Museum in Vienna, where it was photographed by Macbride as his type photograph number 34331.

The species was placed by Schauer (1847) in his Section Zapania, Subsection Axilliflorae. It has been collected in flower in July and September. In many respects it resembles one of the diminutive species of Lantana, like L. glaziovii Moldenke. Macedo says of it "plantinha campestre, amarelas".

In all, 3 herbarium specimens and 7 mounted photographs, including phototype material, have been examined by me.

Citations: BRAZIL: Goiás: Macedo 3251 (N); J. E. Pohl 6063 [Macbride photos 34331] (It--photo of type, Kr--photo of type, N--photo of type). Minas Gerais: Regnell III.948 (F--photo, N, N--photo, S, Si--photo, Z--photo).

LIPPIA NIGERIENSIS Moldenke, Phytologia 3: 272. 1950.

Bibliography: Moldenke, Phytologia 3: 272. 1950; E. J. Salisb., Ind. Kew. Suppl. 11: 138. 1953; Moldenke, Phytologia 5: 97. 1954; Moldenke, Résumé 137, 138, 426, & 462. 1959; Moldenke, Résumé Suppl. 1: 10. 1959; Moldenke, Phytologia 12: 42. 1965.

Annual or perennial herb, to 2 m. tall, or erect subshrub, many-headed; stems annual, apparently simple, obtusely tetragonal, the

sides sulcate, densely short-pubescent with irregularly twisted rather spreading whitish hairs; twigs bright-brown; nodes rather indistinctly annulate; principal internodes 5--11 cm. long; leaves ternate, ascending; petioles 1 cm. long or less, densely white-pubescent with more or less antrorse hairs; leaf-blades firmly chartaceous, pale rather glaucous-green on both surfaces, oblong-elliptic, 4.5--9.5 cm. long, 1--2 cm. wide, acute or subacute at the apex, rather regularly serrate with bluntish teeth except at the base, stiffly asperulous or scabrous and strigillose-pilose above, densely canescent-tomentellous beneath; midrib slender, impressed above, prominent beneath; secondaries very slender, 10--12 per side, arcuate-ascending, arcuately joined near the margins, not extending into the teeth, impressed above, prominulous beneath; veinlet reticulation abundant, subimpressed above, prominulous but usually hidden by the tomentum beneath; inflorescence axillary and terminal, the axillary ones usually limited to a pair in the upper 1 or 2 groups of leaf-axils, the terminal ones aggregated into a more or less flattened corymb of which most of the rays are compound (branched to form a small umbel of heads at the apex); primary and secondary peduncles densely canescent-pubescent with more or less antrorse hairs; bracts limited to 1 or 2 groups of 3 each beneath and in the terminal corymb; spikes capitate or to about 1 cm. long, densely many-flowered; bractlets ovate, about 4 mm. long and 2 mm. wide, acuminate or subacuminate at the apex, very densely villous with canescent or slightly yellowish hairs; corolla white or white with a yellow eye, its tube about 3 mm. long, densely tomentellous on the outside except at the very base, the larger lip and additional 1 mm. long, tomentellous on the outer surface, glabrate within.

The type of this distinct species was collected by W. D. MacGregor (no. 429) on the Banchi Plateau, Northern Nigeria, on December 28, 1928, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The species has been found in dry grassland by roadsides, flowering in June and December. Gossweiler notes "not frequent in Hyparrhenietum" in Angola. The flowers are described as "white" on Gossweiler 14070 and as "white with a yellow eye" on Meikle 1059. Material has been misidentified and distributed in herbaria under the name L. adoensis Hochst.

In all, 6 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: NIGERIA: Northern: Lely 115 (K); W. D. MacGregor 429 (F--photo of type, K--type, N--photo of type, N--isotype, Sg--photo of type, Z--photo of type); Meikle 1059 (S). ANGOLA: Lunda: Gossweiler 14070 (B, W--2074432).

LIPPIA NIGERIENSIS var. BREVIPELUNCULATA Moldenke, Phytologia 3: 272--273. 1950.

Bibliography: Moldenke, Phytologia 3: 272--273 (1950) and 3: 455 & 456. 1951; Moldenke, Résumé 138, 142, & 462. 1959.

This variety differs from the typical form of the species in having its leaves regularly in whorls of 4--6, only 3--4.5 cm.

long and 4--11 mm. wide, and bullate above, and the inflorescences unbranched and only 1.5--3 cm. long in all.

The type of the variety was collected by H. V. Lely (no. P.40) in groups after fires at Banchi, Northern Nigeria, in January, 1929, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The plant is described as an aromatic herb or small shrub, 2 m. tall, with white or lemon-yellow flowers, known locally as "okwango" in the Congo, growing on riverbanks at 1875 meters altitude, flowering in January, May, and July. The Pritchard collection is said to have had the "lemon-yellow" flowers, while the Henriques and the Barbosa & Moreno collections had them "white".

Herbarium material has been misidentified and distributed in herbaria as L. scaberrima Sond.

In all, 6 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: NIGERIA: Northern: Lely P.40 (F--photo of type, K--type, N--photo of type, N--isotype, Sg--photo of type, Z--photo of type). CONGO LEOPOLDVILLE: Kevers 48 (Br). ANGOLA: Huila: Barbosa & Moreno 10167 (U1); C. Henriques 49 (U1); N. M. Pritchard 306 (U1).

LIPPIA OATESII Rolfe in Oates, Matabeleland, ed. 2, 407. 1889.

Bibliography: Rolfe in Oates, Matabeleland, ed. 2, 407. 1889; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 279. 1900; Prain, Ind. Kew. Suppl. 4: 142. 1913; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 51 & 96. 1942; Moldenke, Bol. Soc. Venez. Cienc. Nat. 11: 48. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 74. 1948; Moldenke, Phytologia 3: 77, 137, & 138. 1949; Moldenke, Alph. List Cit. 4: 1099. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 119 & 190. 1949; Moldenke, Résumé 147, 149, & 462. 1959; Moldenke, Phytologia 12: 42, 106, 230, & 232. 1965.

Perennial aromatic herb, undershrub, or shrub, to 1.1 m. tall, strongly scented, many-headed, with an underground rootstock; branchlets slender, woody, with very short whitish pubescence; leaves ternate, subsessile, oblong, subcoriaceous, 2.5--4 cm. long, obscurely crenate along the margins, rather rugose, subscabrous above, pubescent, with elevated veins beneath; heads globose, 1.3 cm. in diameter, borne in 4's on short peduncles in the upper leaf-axils; bractlets orbicular, very hairy, not cuspidate, the outer ones 4 mm. wide; flowers with the odor of Aloysia triphylla, not longer than the subtending bractlets; corolla hypocrateriform, yellow or yellowish-white to white.

The type of this distinct species was collected by Frank Oates -- in whose honor it was named -- in Matabeleland, Southern Rhodesia, in about 1874. In a letter to me dated February 19, 1949, Dr. H. Wild says that "Oates never crossed the Zambesi and so never entered Northern Rhodesia". The species has been found in park-like veld, damp grass veld, Acacia veld, and on gray loam soil, at 1000 meters altitude, flowering in October, December, and February. Penny says it is "not particular as to surroundings".

Eyles says that it is "used to repel mosquitoes", while Hopkins reports that it "keeps away snakes". A common name for it is "um susani". The flowers are described as "pale yellow" on R. M. Davies 52, as "yellowish-white" on Kolbe 3169, and as "white" on J. C. F. Hopkins s.n. [21.2.1941].

Baker (1900) separates the 8 tropical African species of Lippia known to him as follows:

1. Bractlets orbicular, obtuse at the apex.
 2. Peduncles very short.....L. oatesii.
 - 2a. Peduncles elongate.....L. radula.
- 1a. Bractlets cuspidate at the apex.
 3. Leaves small.
 4. Leaves orbicular or obovate.....L. somalensis.
 - 4a. Leaves oblong, rugose.....L. javanica.
 - 3a. Leaves larger, oblong or oblanceolate-oblong, scarcely rugose.....L. abyssinica.
- 1b. Bractlets acuminate at the apex.
 5. Leaves decussate-opposite.....L. ukambensis.
 - 5a. Leaves ternate.....L. burtonii.
- 1c. Bractlets acute at the apex.....L. plicata.

The A. Peter 46707 distributed as L. oatesii is actually L. javanica (Burm. f.) Spreng., while Borle 306 is L. whytei Moldenke. Baker (1900) cites a Baines s.n. [South African Gold Fields] from Northern Rhodesia.

In all, 18 herbarium specimens and 2 mounted photographs have been examined by me.

Citations: SOUTHERN RHODESIA: J. Borle 77 (S); R. M. Davies 52 (Rh--23304), 128 (Rh--23302); Haptröm & Acock 1322 (N, S, S); J. C. F. Hopkins s.n. [Govt. Herb. S. Rhodesia 10231] (N), s.n. [Feb. 1939] (N, Rh--7776), s.n. [21.2.1941] (Rh--7975); Kolbe 3169 (K); Penny 1 (Rh--5709); Stent s.n. [14.4.31] (Rh--3966); E. Wall 10, in part (Go, N, N--photo, Z--photo), s.n. [15/10/1938] (S); O. West 2679 (Rh--25645). ANGOLA: Gossweiler 9364 (K).

LIPPIA OAXACANA Robinson & Greenm., Am. Journ. Sci. 150 [ser. 3, 50]: 162. 1895.

Bibliography: Robinson & Greenm., Am. Journ. Sci. 150 [ser. 3, 50]: 162. 1895; Greenm., Proc. Am. Acad. Sci. 39: 87. 1903; Durand & Jacks., Ind. Kew. Suppl. 1: 250. 1903; P. C. Standl., Contrib. U. S. Nat. Herb. 23: 1244 & 1246. 1924; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 17 & 96. 1942; Moldenke, Alph. List Cit. 2: 393 & 467 (1948), 3: 830 & 834 (1949), and 4: 1182. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 31 & 190. 1949; Moldenke, Résumé 37 & 462. 1959; Moldenke, Résumé Suppl. 3: 9. 1962; Moldenke, Phytologia 12: 133. 1965.

A shrub, to 1.5 m. tall; stems cinereous, subterete, smoothish; branchlets canescent-tomentose; leaves decussate-opposite, short-

petiolate; leaf-blades ovate-oblong, 2--3.6 cm. long, 1--1.8 cm. wide, acute or obtuse at the apex, crenulate-serrulate along the margins, obtuse or rounded at the base, rugose and densely pubescent above, paler and tomentose beneath; inflorescence terminal on the branches, rather dense and spike-like, 5 cm. long, almost 2.5 cm. wide, somewhat looser and rarely branched below; bractlets rhombic-obovate, yellowish-green, 8 mm. long, 4 mm. wide, abruptly acuminate at the apex, pubescent on the outer surface, ciliate along the margins, 1-flowered; flowers about 4.5 mm. long; calyx 2-lobed, densely pilose-pubescent; corolla hypocrateriform, cream-colored, about 3 mm. long, 4-lobed, sparingly pubescent on the outside; fruit pyriform.

The type of this distinct species was collected by Cyrus Guernsey Pringle (no. 6021) on dry limestone hills in Las Hoyas Canyon, at an altitude of 5000 feet, Oaxaca, Mexico, on November 1, 1894. The original description cites also E. W. Nelson 1586 & 1841 from six miles above Dominguito, at an altitude of 5000 to 6000 feet, collected on October 3, 1894, but annotations on the original specimens seem to indicate that the authors regarded the Pringle collection as the actual type. Only its printed labels are inscribed "n. sp." after the binomial.

The species has been collected on limestone mountains and dry limestone hills, at altitudes of 1350 to 1750 meters, flowering from July to September and in November, fruiting in July, August, and November. McVaugh reports it "occasional in wooded ravines and shrub-covered hills with Acacia, Mimosa, Eysenhardtia, and Forestiera".

In all, 36 herbarium specimens, including type material, and 4 mounted photographs have been examined by me.

Citations: MEXICO: Guerrero: Bravo Hollis 7145 (Me, Me, Me, Me); Pringle 8417 (Ca--104939, Cm, G, Io--38728, It, Me, Me, Me, Mi, N, Po--64108, S, Vt). Jalisco: R. McVaugh 17639 (Mi). Oaxaca: E. W. Nelson 1586 (G), 1841 (G); Pringle 6021 (Br--isotype, C--isotype, Ca--104938--isotype, Cm--isotype, F--photo of isotype, G--isotype, Io--38729--isotype, Me--isotype, Me--isotype, Me--isotype, N--photo of isotype, S--isotype, Si--photo of isotype, Vt--isotype, Z--photo of isotype). Puebla: Purpus 2571 (Ca--139671, G, Mi, N), 3925 (Ca--139670).

LIPPIA OBOVATA Sessé & Moc., Fl. Mex., ed. 2, 140. 1894.

Bibliography: Sessé & Moc., Fl. Mex., ed. 2, 140. 1894; A. W. Hill, Ind. Kew. Suppl. 7: 139. 1929; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 17 & 96 (1942) and [ed. 2], 31 & 190. 1949; Moldenke, Résumé 37 & 462. 1959.

Shrub, 1.8 m. tall; branches slender, erect, obsoletely 4-angled, striate; leaves decussate-opposite, very short-petiolate; leaf-blades obovate, serrate along the margins, obliquely striate, subvillous; inflorescence axillary, pedunculate, somewhat surpassing the subtending leaves; heads or spikes oblong; bractlets imbricate, ovate; corolla pinkish-white.

Nothing is known to me of this plant except what is stated in the original description, where the above-mentioned characters are listed and it is further stated "Reliqua ut in caractere. Floret Maio. $\bar{\eta}$. Proprietas. Tota planta, folia precipue et capitula origanum redolent; unde nomen ab indigenis inditum, qui ad condimenta origani loco eduntur."

LIPPIA OBSCURA Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1155--1156. 1904.

Synonymy: Lantana obscura Briq. ex Moldenke, Alph. List Invalid Names Suppl. 1: 12, in syn. 1947.

Bibliography: Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1155--1156. 1904; Briq. in Chod. & Hassler, Pl. Hassler. 2 (11): 491. 1904; Prain, Ind. Kew. Suppl. 3: 104. 1908; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37, 41, & 96. 1942; Moldenke, Lilloa 8: 424. 1942; Moldenke, Alph. List Cit. 1: 121, 171, & 264. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 12. 1947; Moldenke, Lilloa 14: 44. 1948; Moldenke, Castanea 13: 117. 1948; Moldenke, Alph. List Cit. 2: 553 (1948), 3: 689, 704, & 705 (1949), and 4: 1165, 1250, & 1251. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80, 99, & 190. 1949; Stellfeld, Trib. Farmac. 19 (10): 169. 1951; F. C. Hoehne, Ind. Bibl. & Num. Pl. Col. Com. Rondon 349. 1951; Angely, Fl. Paran. 7: 12. 1957; Moldenke, Résumé 94, 117, 306, & 462. 1959; Angely, Fl. Paran. 16: 60 (1960) and 17: 46. 1961; Troncoso, Darwiniana 12: 257 & 260--261, fig. 1. 1961; Moldenke, Phytologia 12: 24, 26, 47, & 170. 1965. Illustrations: Troncoso, Darwiniana 12: 261, fig. 1. 1961.

Shrub, often arborescent, to 3 m. tall, sparsely branched; branches divergent, obtusely tetragonal, ferruginous-pubescent throughout with short antrorse hairs; middle internodes 2--8 cm. long; leaves decussate-opposite; petioles to 1.5 cm. long, canescent, tomentose-pubescent; leaf-blades ovate-elliptic or ovate-oblong, about 8 cm. long and 3.5 cm. wide, obtuse at the apex, more convex along the margins below the middle, rounded-subcordate at the base, rather thick-textured, rugose and green above and short-puberulent, paler and densely short-tomentose-pubescent beneath, the marginal teeth small and regular, the venation densely reticulate, areolate on the upper surface, prominent beneath; peduncles slender, about 1 cm. long, scarcely equaling or equaling the petiole, canescent-pubescent throughout with short antrorse hairs; heads small, globose-subcylindric, 8--10 per leaf-axil, about 5 mm. long and wide; bractlets imbricate, ovate, 2--2.5 mm. long, about 2 mm. wide, connate at the base, complicate, acute at the apex, short-pubescent on the back, densely white-pubescent on the margins; flowers fragrant; calyx minute, campanulate, about 1 mm. long, pubescent on the outside, obscurely sub-bilabiate, the margin repandly 4-denticulate; corolla hypocrateriform, small, white or cream-white to yellowish-white, puberulent above, the tube cylindric, exserted about 2 mm. from the calyx, the lobes rounded, small, the anterior one smaller, about 0.5 mm. long; stamens and pistil normal for the genus, included.

The type of this species was collected by Emil Hassler (no. 8016) in woods in the region of the upper course of the Río Apa, Paraguay, in 1901 or 1902, and was deposited in the herbarium of the Botanisches Museum at Berlin, where it was photographed by Macbride as his type photograph number 17529, but is now destroyed. Troncoso (1961) regards the specimen in the Delessert Herbarium at Geneva as the type. She classifies the species in her Subgenus *Lippia*, Section *Goniostachyum*. She cites the following specimens not as yet seen by me: BRAZIL: Paraná: Dusén 9219 (K). PARAGUAY: Hassler 8016 (Bm--isotype, Cb--isotype, K--isotype, Ml--isotype, P--isotype). She comments that "*Lippia obscura* presenta gran afinidad con varias especies brasileñas de la misma sección *Goniostachyum*: *L. salviaefolia* Cham., *L. velutina* Schauer, *L. rubiginosa* Schauer, *L. organoides* Kth. Solamente un minucioso estudio comparativo con los tipos de esta especie, difíciles de diferenciar por sus descripciones, permitirá establecer su verdadero valor específico."

Briquet (1904) says "Cette espèce est voisine du *L. polycephala* var. *Aemillii* à laquelle elle ressemble par la forme des feuilles, mais elle s'en distingue par ses pédoncules atteignant à peu près les pétioles, à capitules longuement dépassés par les feuilles; les capitules eux-mêmes sont moins nombreux, plus courts, à corolles plus petites, ne jaunissant pas la desiccation. Comme apparence générale, la *L. obscura* rappelle beaucoup le *L. graveolens* Kunth, espèce mexicaine. -- La ressemblance est également fort étroite avec le *L. organoides* Kunth, du moins avec les échantillons du Brésil (Blanchet n. 3886) que Schauer rapporte au *L. organoides*, car nous n'avons pas vu le type vénézuélien de Kunth, et il n'est pas absolument certain que le rapprochement fait par Schauer soit fondé. La type de Blanchet en diffère cependant par ses feuilles plus petites, les pédoncules plus longs que les pétioles assez courts et des capitules à bractées oblongues acuminées, plus allongées, blanches, soyeuses extérieurement."

The plant has been found by collectors in cerrados along roadsides, in fields and campos, on campo cerrado, and in mountains, flowering from November to May, at altitudes of 720 to 730 meters. The flowers are described as "white" on Hassler 8016 and Malme 1482 & 3121, as "cream-white" on Com. Rondon 2817 & 2819, and as "yellowish-white" on Com. Rondon 1778 & 1780. Material has been misidentified and distributed in herbaria as *L. martiana* Schau.

In all, 30 herbarium specimens, including type material of both names involved, and 5 mounted photographs have been examined by me.

Citations: BRAZIL: Matto Grosso: F. C. Hoehne Com. Rondon 1778 (Sp--31992), 1780 (N), 2817 (N), 2819 (N, Sp--31991); Malme 1482 (N, S, S), 3121 (N, S). Paraná: Dusén 9219 (I, Ml, N, S), 14929 (Ca--501875, N, N, S), 16591 (N, S), s.n. [Morungava, 1914--16] (N, S); Hatschbach 3751 (Z), 6901 (Bm). PARAGUAY: Anisits 2430 (N,

S); Hassler 8016 [Macbride photos 17529] (Ca--944345--isotype, It--photo of type, Kr--photo of type, N--isotype, N--isotype, N--photo of type, N--photo of type, S--isotype, W--photo of type).

LIPPIA ORIGANOIDES H.B.K., Nov. Gen. & Sp. Pl. 2: 267. 1818 [not L. organoides Schau., 1904].

Synonymy: Lippia berterii Spreng. in L., Syst. Veg., ed. 16, 2: 752. 1825. Lippia organoides Humb. ex Spreng. in L., Syst. Veg., ed. 16, 2: 752. 1825. Lippia organoides Humb. & Bonpl. ex Steud., Nom. Bot., ed. 2, 2: 54. 1840. Lippia organoides Humb. & Kunth ex D. Dietr., Syn. Pl. 3: 599. 1843. Lippia organoides Kunth ex Schau. in A. DC., Prodr. 11: 575. 1847. Lippia organoides Just, Bot. Jahresber. 23 (2): 566. 1897. Lippia organoides H.B.K. ex Kuntze, Rev. Gen. Pl. 3 (2): 253. 1898. Lippia organoides H.B.K. ex Moldenke, Résumé 316, in syn. 1959.

Bibliography: H.B.K., Nov. Gen. & Sp. Pl. 2: 267. 1818; Spreng. in L., Syst. Veg., ed. 16, 2: 752. 1825; Steud., Nom. Bot., ed. 2, 1: 664 (1840) and 2: 54. 1840; D. Dietr., Syn. Pl. 3: 599. 1843; Walp., Repert. Bot. Syst. 4: 50. 1845; Schau. in A. DC., Prodr. 11: 575 & 593. 1847; Schau. in Mart., Fl. Bras. 9: 224. 1851; Bocq., Adansonia 3: 244. 1863; Hiern, Vidensk. Meddel. Kjøbenh. 1877-1878: 97. 1877; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Just, Bot. Jahresber. 23 (2): 76 & 566. 1897; Kuntze, Rev. Gen. Pl. 3 (2): 253. 1898; Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1156. 1904; Hayek, Denkschr. Kaiser. Akad. Wissensch. Math.-nat. 79 (1): 295. 1908; Glaz., Bull. Soc. Bot. France 58, Mém. 3: 540. 1911; H. H. Rusby, Bull. N. Y. Bot. Gard. 8: 116. 1912; M. Martínez, Cat. Nomb. Vulg. & Cientif. Pl. Mex., [ed. 2], 340. 1937; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 31, 32, 37, 40, 73, 95, & 96. 1942; Moldenke in Lundell, Fl. Texas 3 (1): 54. 1942; Moldenke, Bot. Gaz. 106: 162. 1944; Moldenke, Phytologia 2: 81, 82, & 107. 1945; Moldenke, Alph. List Cit. 1: 40, 45, 89, 97, 106, 107, 121, 137, 212, 221, 231, & 266. 1946; Moldenke, Lilloa 12: 148. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 13. 1947; Moldenke, Bol. Soc. Venez. Cienc. Nat. 11: 45, 46, & 51. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 50. 1948; Moldenke, Alph. List Cit. 2: 352, 369, 446, 448, 485, 573, 610, 628, & 643 (1948), 3: 689, 696, 782, 819, 820, 887, 891, 947, 955, 974, & 975 (1949), and 4: 984, 1006, 1014, 1070, 1075, 1079, 1080, 1175, & 1216. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 60, 63, 162, & 190. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 10. 1949; Moldenke, Phytologia 3: 133 (1949) and 3: 375. 1950; Moldenke, Bol. Soc. Venez. Cienc. Nat. 11: 289. 1950; Moldenke, Phytologia 3: 485. 1951; Calpouzos, Econom. Bot. 8: 228. 1954; Moldenke in Steyermark & al., Fieldiana 28: 1082. 1957; Moldenke, Résumé 67, 71, 94, 220, 311, 316, & 462. 1959; Troncoso, Darwiniana 12: 260. 1961; Tamayo, Bol. Soc. Venez. Cienc. Nat. 22: 128 & 173. 1961; Moldenke, Résumé Suppl. 7: 4 (1963), 8: 5 (1964), 10: 4 (1964), and 11: 7. 1964; Moldenke,

Phytologia 12: 23, 47, 56, 63, 152, 162, 164, 170, & 188--190.
1965.

BOOK REVIEW

Alma L. Moldenke

"Caribbean Gardening --with special reference to Jamaica", by
Aimee Webster (F. R. H. S.), viii + 138 + xxi pp., illustr.
William Cleves & Sons, London, England. U. S. A. distrib-
utor: Edwin A. Menninger, Stuart, Florida. 1964. \$2.80

The following quote from the reverse side of the title page gives a good survey of the book and a glowing feeling for the subject matter that motivates the author. "Cascading colours of mammoth flowers with powerful fragrances.....lushly variegated leaves.....climatic extremes from arid coast to rain-misted forest. These are heritages of Carib countries. Here, Europeans, Africans and Asians settled. Over the centuries, they introduced from their own lands, favourite plants which, with the Caribbean's own flora, provide a garden catalogue of spectacular brilliance and beauty.....The variety of species grown in Caribbean gardens is the subject-matter of this book [and] it is a guide to successful gardening.....The glossary of popular and botanic plant names is useful alike to gardeners, visitors and students of botany."

The chapters of the text cover (a) the first gardeners historically and fascinatingly, (b) efficient and attractive plans for laying out the garden, (c) suggestions for hedges and lawns, (d) effective treatment of roses, orchids, African violets, bougainvillaeas, dahlias, and gladioli all as prominent favorites in cultivation in this large area, (e) soil improvement, (f) nature and control of pests and diseases, (g) propagation methods, and (h) monthly listings by blooms of a large number of plants that make the descriptive quotation above a reality.

The color plates, the four dozen black-and-white prints and the eight diagrams are excellent for clarity, attractiveness and guidance.

Advertisements separate from the text bring the book price down to an unbelievable \$2.80.

The enthusiasm of the author and the artfully and thoroughly developed details show that this assignment was a labor of love for her and a culmination of many years of appreciative knowledge in this field.